

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1206. (Vol. XXIV. No. 6.)

FEBRUARY 5, 1932

Weekly, Price 6d.
Post Free, 7½d. Abroad, 8d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2

Telephone: (2 lines), Holborn 2311 and 1884.

Telegrams: Truditur, Westcent, London.

Annual Subscription Rates, Post Free.

United Kingdom .. 33s. 0d. United States .. \$8.75.

Other Countries .. 35s. 0d.

CONTENTS

Editorial Comment:	PAGE
A Tombstone White	105
Hanoi-Paris Flight	107
Vickers "Jockey"	108
Royal Aero Club Official Notices	110
Fuel Economy	111
Private Flying and Gliding	112
Airport News	114
Air Transport	117
Airships from the Four Winds	119
The Industry	120
Air Ministry Notices	122
Royal Air Force	123
Air Post Stamps	124

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

- 1932
- Feb. 6. Rugby: R.A.F. v. Bedford, at Bedford.
- Feb. 10. "Some Aspects of Meteorology in Connection with Gliding and Soaring Flight," Lecture by Capt. F. Entwistle, at City and Guilds Eng. College, S. Kensington.
- Feb. 11. "Tests of Aircraft Components," Lecture by I. J. Gerard before R.Ae.S.
- Feb. 11. Herts and Essex Aero Club Annual Dinner and Dance, Holborn Restaurant.
- Feb. 13. Rugby: R.N. v. R.A.F., at Twickenham.
- Feb. 20. Rugby: R.A.F. v. Coventry, at Coventry.
- Feb. 22. British Gliding Association. Annual General Meeting.
- Feb. 24. "A Flight to Abyssinia," Lecture by Sqdn.-Ldr. J. L. Vachell, before R.U.S.A.
- Feb. 24. Rugby: R.A.F. v. United Bank, at Ealing.
- Feb. 25. "Catapults," Lecture by P. Salmon before R.Ae.S.
- Feb. 29. "Flying Boats on Commercial Air Routes," Lecture by C. H. Jackson, at City and Guilds Eng. College, S. Kensington.
- Mar. 1. "Some Problems connected with High-Speed Compression-Ignition Engine Development," Lecture by C. B. Dicksee before R.Ae.S.
- Mar. 4. Leicestershire Ae.C. Annual Ball.
- Mar. 9. Rugby: R.A.F. v. Oxford University, at Oxford.
- Mar. 10. "Results with the New Wind Tunnel at N.P.L.," Lecture by E. F. Relf, before R.Ae.S.
- Mar. 16. "Development of Naval Air Work," Lecture by Commodore N. F. Laurence, before R.U.S.I.
- Mar. 23. "High-Speed Flying," Lecture by Sqdn.-Ldr. A. H. Orlebar, before R.U.S.I.
- Mar. 24-28. London Gliding Club's Meeting at Dunstable.
- Apr. 1. Entries close at ordinary fees for King's Cup Race.
- Apr. 2. Rugby: Army v. R.A.F., at Twickenham.
- Apr. 2-10. National Aircraft Show, Detroit, U.S.A.
- Apr. 7. "Wing Construction," Lecture by H. J. Stieger, before R.Ae.S.
- Apr. 13. "The North-West Frontier of India," Lecture by Maj.-Gen. S. F. Muspratt, before R.U.S.I.
- Apr. 14. "Aero Engine Accessories," Lecture by W. L. Taylor, before R.Ae.S.
- Apr. 21. "Air Port Development," Lecture by N. Norman, before R.Ae.S.
- May 1. Entries close at double fees for King's Cup Race.
- May 18. Household Brigade Flying Club Meeting, Heston.
- May 22-30. Conference of Transoceanic Aviators at Rome.

INDEX FOR VOL. XXIII

The 8-page Index for Vol. XXIII of "Flight" and "The Aircraft Engineer" (over 6,500 references) (January to December, 1931), is now ready and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C.2, price 1s. per copy, net (1s. 1d. post free).

EDITORIAL COMMENT



Ever man deserved our sympathy it is Mr. F. Tymms, M.C. A year ago he took over the office of Director of Civil Aviation in India with a glowing prospect before him. Col. Shelmerdine had been sedulously sowing the fields, and he well deserved to reap the harvest, but when the harvest was almost ripe he was called to fresh fields and pastures new. It seemed that to Mr. Tymms had fallen the rôle of the labourer in the parable, who went into the fields at the eleventh hour, but was paid at the same rate as if he had worked all day. To all appearances it was certain that under his auspices there would be accomplished an air service right through from Karachi to Calcutta, and perhaps even on to Rangoon. It was no fault of his that the spade work had been already done, but it did seem a piece of glorious good luck for him that he should be the man to gather in the harvest. Then there descended, not the reaping hook, but the economy axe. The dismal tale is told in some detail on another page in this issue.

It was Kipling, we believe, who in one of his earlier and less famous poems once wrote:

(We quote from memory, and indeed we have never seen the lines in print.)

"It is not good for the Christian white to hustle the Aryan brown,
For the Christian riles, and the Aryan smiles,
And he weareth the Christian down;
And the end of the fight is a tombstone white,
With the name of the late deceased,
And the epitaph drear 'A Fool Lies Here
Who Tried to Hustle the East.'"

Air transport is one of the most pronounced forms of hustle, and naturally the path of those who have worked to introduce it into India has not been strewn with roses. We do not, of course, agree with the words of the drear epitaph. We are full of admiration for the men who have fought such an uphill battle. To be honest, we cannot blame the East for saving money at the present time. Has not Great Britain sold R100 for scrap and stopped work on the big flying-boat? To be still further honest, we ought not to blame the Aryan brown as the only objector in the past to the hustling policy of the air. The Christian white in India showed himself far from dynamic in his demands for speedier communications. In fact, it has seemed far from unlikely that the rich merchants of Calcutta have dubbed all this attempt at hustle a confounded nuisance. In the past 10 years or so, when a modicum of money was available, nothing in the way of active flying on mail routes was attempted, beyond the contract service between Delhi and Karachi, and that was designed more for the convenience of the Government secretariat than for the benefit of commerce.

Now, when for the present the demand comes too late, we see signs of grace in the commercial community of India. Just before Christmas a meeting of the Associated Chambers of Commerce of India and Burma was held in Calcutta. Mr. C. G. Woodhouse, of Burma, moved:—"That this Association deplores the slow progress so far made by India in the development of aviation, particularly on the trans-Indian route, and urges the Government to take immediate steps towards the inauguration of an air-mail service between Karachi and Rangoon." It is notable that the initiative for this came from Burma. Rangoon is probably the worst served of all the great commercial cities of the British Empire in the matter of mails. As an amendment the following addition was moved by Mr. P. Mukerji of the Punjab. Again the mover's origin is significant. Mr. Mukerji represents the Punjab Chamber of Commerce, but his name shows him to be a Bengali Brahman. His amendment ran:—

"And that, pending any other air facilities, arrangements be made by the Government with any available service for the conveyance of air mails between an air terminus in India and Rangoon, and between Rangoon and any other country further east, so as to ensure that these services are available to the public at large and particularly to the commercial and trading public."

The Association unanimously adopted the resolution as amended. It really seems as if the commercial community of India has woken up at last, and is in earnest in desiring air mails. It is a thousand pities that that community did not make a strong demand for them some time ago, when such a demand could scarcely have been ignored. As it is, the business men are now so keen on air mails that they have demanded from the Government leave to send their letters to the further East by the Dutch and French air services which now fly regularly across India, but which may not carry mails from one part of the British Empire to another.

The Government Member for Industries and Labour, Sir Joseph Bhore, attempted to reply to the resolution of the Associated Chambers, but he was far from convincing or comforting. He said that in the last few years the Government had spent over

a crore of rupees (£62,500) in providing the conditions necessary for the operation of air mails, and this, he thought, deserved sympathy rather than criticism. We quite agree that you cannot have air transport without aerodromes, wireless, meteorology, etc. The Minister went on to say that the Government was then considering the possibilities of air mails to South India and even Ceylon. That seems typical of the Government of India. It will take any sort of step short of practical flying. The Minister said that he recognised the disabilities which told on Burma in the matter of communications, and was considering how far it was possible for the Government to mitigate those disadvantages. In all probability a separate Government of Burma will settle that question for itself. Finally Sir Joseph Bhore said: "I want to make it clear that it is only as a last resort and in very exceptional circumstances we will have to have recourse to a foreign air service carrying mails in our own lands."

Nobody wants to see our mails carried about India and beyond by Dutch and French air services, but we should like to know what is the real objection to allowing Imperial Airways to carry them, as it is prepared and anxious to do. Sir George Beharrell spoke of this desire of theirs so recently as at the lunch which followed the departure of the first air mail for Capetown. We have always understood that the objection raised by the Government of India to operation by Imperial Airways across India was that only a genuine Indian company would receive the support of the Government. A purely British concern is regarded by the Government of India as being in the position of a foreign concern. This attitude has, of course, been adopted by the Government of India as a concession to the "India for the Indians" movement.

It appears to us that a good deal of the ground has been cut from under the feet of the Government of India by this resolution of the Associated Chambers of Commerce, which was moved by an Englishman from Burma, amended by a Bengali from the Punjab, and carried unanimously. As we have pointed out, this resolution urges that leave be granted to use the Dutch and French air services in the interests of commerce. The resolution shows that the commercial community is getting almost desperate in its demands for speedy communications, and is even willing to resort to foreign help. Surely the greater includes the less. If the business men are so anxious to get faster despatch of mails that they want to use really foreign services, it must follow that they would have no objection whatever to make use of the aircraft of Imperial Airways. At least it may be taken as quite certain that Mr. P. Mukerji would have no such objections, and he has interests in two very important Provinces of India. There are other Indian representatives in the Association, and they all voted for the resolution as amended by Mr. Mukerji. Such a demand, coming from such men, ought to carry much weight with the Government of India. It ought, in fact, to carry more weight than is allowed to the politically-minded Bengalis and Punjabis and others who would sooner have no air mail at all than allow Imperial Airways to operate one. This political demand puts sentiment above the solid business interests of the country, and it is deplorable that the Government should bow to it as it has done. Let us hope that a new policy will now be adopted.

The Hanoi—Paris Flight of Codos and Robida



THE BREGUET TYPE 330: Three-quarter front view of the all-metal observation plane (650 h.p. Hispano Suiza), as used by Codos and Robida on their Hanoi-Paris flight.

LAST week we gave a brief account of the record-breaking flight accomplished by the French pilots Codos and Robida, when they flew from Hanoi, Indo-China, to Paris in 3 days 5 hours 40 minutes. We have now received some further details of this flight from our Paris Correspondent who writes as follows:— Leaving Hanoi at 6.40 o'clock on Thursday morning (local time) and taking advantage of the prevailing full-moon period, the airmen flew night and day, practically making stops of only sufficient time for refuelling and the examination of their passports and other papers. They thus established a new record, surpassing by 30 hours and 20 minutes the best previous time of 4 days and 12 hours made for this flight by Costes and Bellonte about two years ago. Codos declared, moreover, on his arrival that they could have gained several hours additional but for the strong head winds and rain that they encountered between Basra and Athens and, further, if he could have flown directly from Athens to Paris, it would have also shortened the time considerably. Owing, however, to this bad weather and the necessity of taking off with a full load of fuel, Codos decided to make additional landings at Rome and Marseilles.

The various stages of the flight were as follow:—

Hanoi-Calcutta	..	2,200 kms.	(1,367 miles)
Calcutta-Karachi	..	2,300 ..	(1,429 ..)
Karachi-Basra	..	2,200 ..	(1,367 ..)
Basra-Athens ..	..	2,450 ..	(1,522 ..)
Athens-Rome ..	..	990 ..	(615 ..)
Rome-Marseilles	..	650 ..	(404 ..)
Marseilles-Paris	..	700 ..	(435 ..)
Total ..	..	11,490 ..	(7,139 ..)

Both airmen are in Air Union Air Line Company's service, Codos being the Assistant Chief Pilot and Robida an engineer of that company. Enlisting in the artillery, at the age of 18, at the beginning of the world war, Paul Codos was transferred to the Aviation Service in 1917, and obtained his pilot's brevet a year later, in 1918. At the close of hostilities he served as pilot with several air transport companies, and entered the service of the Air Union Company in 1924. He has made a speciality of night flying and piloted the initial night trips made between Paris and London in 1927. In company with Dieudonne Costes, Codos also took part in several long-distance closed-circuit continuous flights, about two years ago, in which world records were established. He is 35 years old and has 5,200 hours of flying to his credit.

Henry Robida is an engineer pilot, in addition to being a licensed navigator. He is 30 years old and has 650 hours in the air to his credit.

With the exception of the installation of an additional fuel tank, the plane used in this flight, a "Breguet," type 330, long-distance observation machine, was of strictly series construction. It was equipped with an Hispano-Suiza 650-h.p. 18-cylinder in W., water-cooled engine of the well-known type used by Costes and Bellonte in their transatlantic flight.

The regular fuel tanks of the Breguet 330 are installed in the lower wings, and have a total capacity of 475 litres (105 gallons). The supplementary tank was installed in the fuselage between the motor and the pilot's seat. It had a capacity of 1,400 litres (312 gallons). The plane thus had a flight radius of some 2,700 kilometres (1,700 miles) at a cruising speed of 180 km./hr. (122 m.p.h.) with the motor turning at 1,640 r.p.m. The petrol consumption at cruising speed was 65 litres (14½ gallons) per 100 km. (62½ miles), with a flight radius of 15 hours.

The Breguet 330 is of the same type of construction as the well-known 270 all-steel military observation plane brought out some time ago by this house and now in service in the French Air Force. The fuselage of the 330 is, however, somewhat wider and more spacious than that of the 270, while a 650-h.p. motor is mounted on the 330 and the 270 is equipped with a 500-h.p. Hispano-Suiza engine.

Both types of planes have a framework consisting of two steel longerons laid at right angles to each other. One of these beams, which is placed in a transversal direction, serves as the longeron on which the lower wing is constructed, and also forms the support for the landing carriage. The other longeron is laid in a longitudinal direction, and supports the fuselage and the empennage of the plane. The fuselage, however, is shortened and does not extend out to the end of the longeron, a feature which is claimed to furnish much better visibility from the observer's seat.

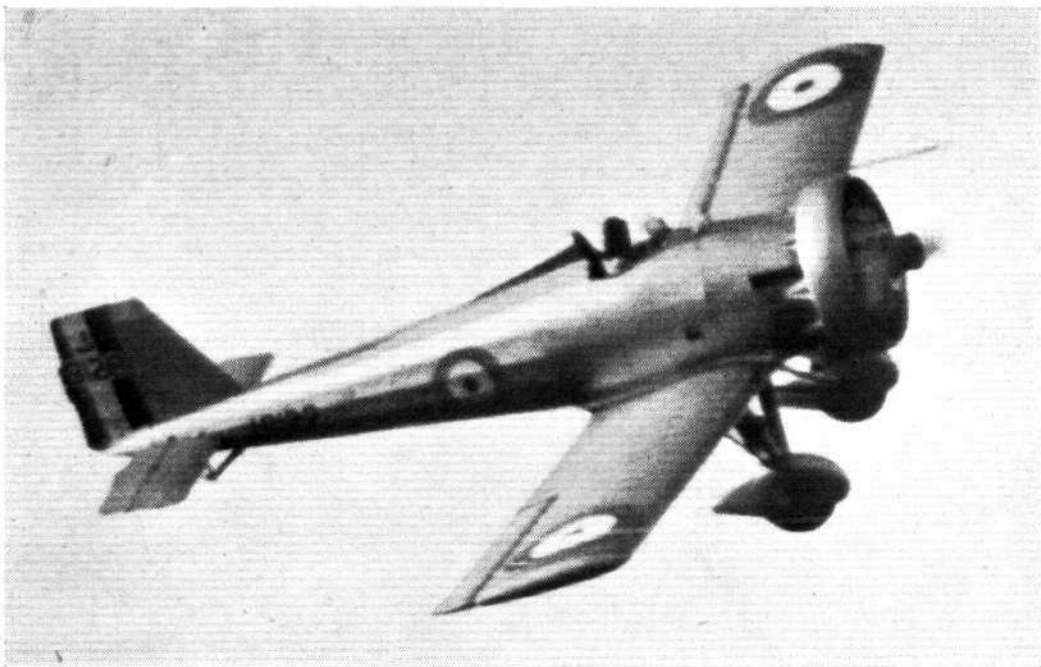
The general characteristics of the Breguet type 330 are as follows:—

Span, upper wing, 17 m. (55 ft. 9 in.); lower wing, 17.5 m. (24 ft. 6 in.). Overall length, 9.85 m. (32 ft. 4 in.). Height, 3.69 m. (12 ft.). Wing area, upper wing, 39.83 sq. m. (428.5 sq. ft.); lower wing, 7.91 sq. m. (85 sq. ft.). Total, 47.74 sq. m. (513 sq. ft.).

R. C. W.

R.101 Memorial Tablet Design

THE prize of £10 offered by the Royal Society of Arts for a design for a bronze wall tablet to commemorate the loss of R.101 has been awarded to George Robb, Manchester Municipal School of Art. The judges stated that the designs submitted were disappointing, but that the winner "provided a design which possesses the dignity requisite in the commemoration of such a national tragedy."



Vickers "Jockey" Interceptor Fighter

IN the competition for interceptor single-seater fighters held a couple of years ago the Vickers machine entered did not succeed in gaining first place, and probably most people have by now forgotten that there was a Vickers monoplane in the competition. Thus when they hear of the Vickers interceptor fighter they associate the title with the machine of some years ago. It is not until quite recently that the aviation community in general has realised that in the meantime Vickers (Aviation), Ltd., have been working away quietly on the problems connected with this class of aircraft, and have produced a machine which, although superficially bearing some resemblance to the earlier type, is in reality a totally new aircraft. For instance, the fuselage is characterised by a very slender outline with a straight taper from cockpit to stern post. The cantilever wings, placed low on the body, are carefully faired into the fuselage form so as to avoid interference drag, and a Townsend ring has been placed around the Bristol "Mercury" engine to reduce drag. Altogether the very greatest care has been taken in "cleaning up" the machine, and the results seem to justify the means, since the machine we illustrate this week is probably the fastest single-seater fighter in the world. The performance figures show the machine to have a maximum speed at altitude of but little short of 240 m.p.h.! Apart from the generally clean aerodynamic design, this high speed is partly to be attributed to a very high wing loading (21.8 lb./sq. ft.). This is probably the highest wing loading ever adopted by a British designer for a service aircraft,

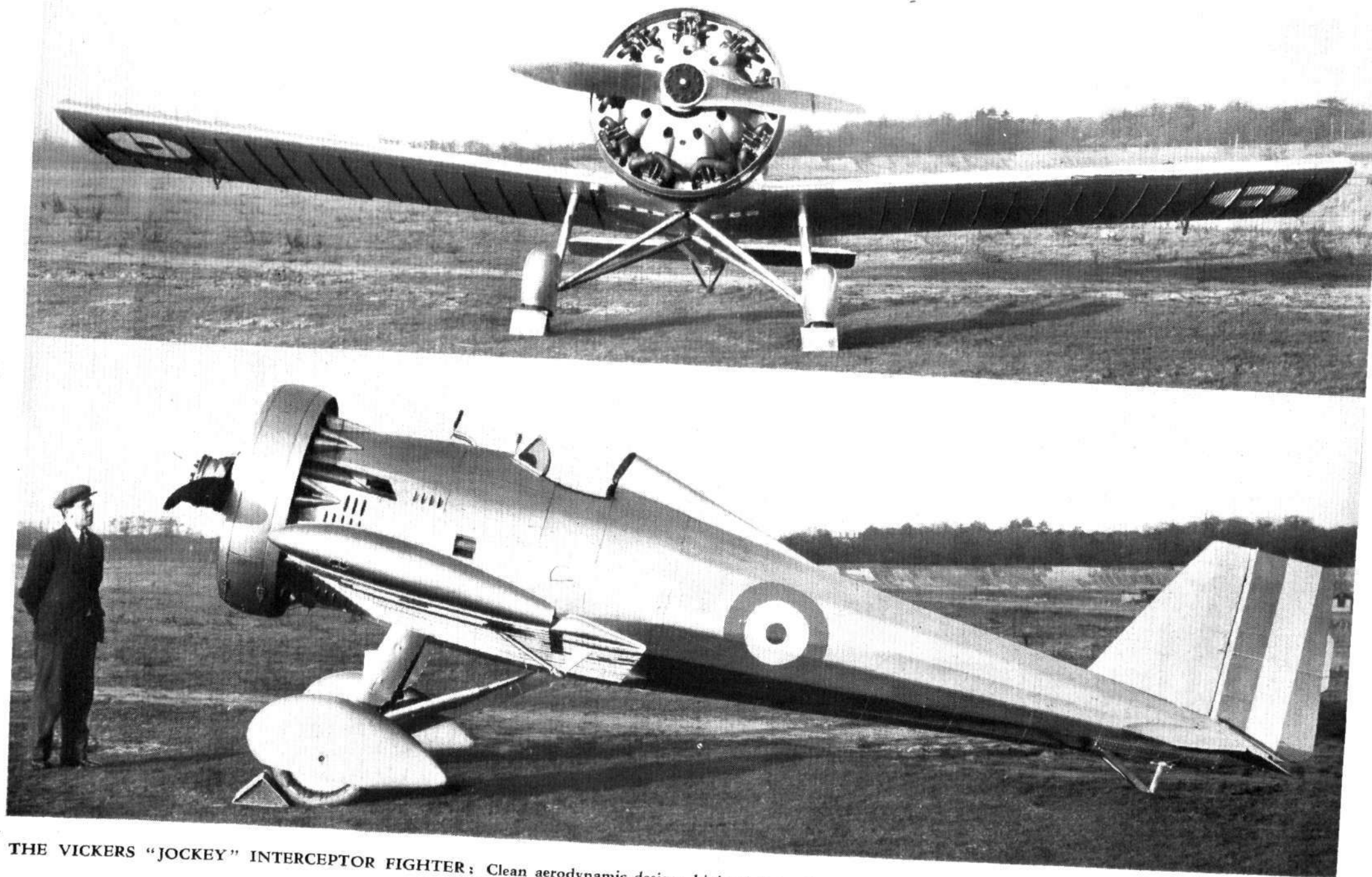
and the landing speed is necessarily high (some 62 m.p.h. at zero altitude). It might have been thought that the climb would suffer somewhat from such high wing loading, but, in point of fact, the altitude of 20,000 ft. is reached in less than 11 minutes (under ideal weather conditions), so that the climb could scarcely be termed inferior. The absolute ceiling, too, is high, some 36,000 ft., and altogether the new Vickers interceptor appears to be a rather formidable piece of apparatus.

The duration at cruising speed is a little over 1½ hours, probably sufficient for reaching the altitude of 13,000 ft. and then cruising there, or a little higher for 1½ hours.

The engine fitted is a Bristol "Mercury," series IV S.2, which develops 530 b.h.p. at 2,600 r.p.m. and 15,800 ft. This engine is geared as well as supercharged, the gear ratio being 0.656:1. From the front view it will be seen that the Fairey metal airscrew is not, in spite of the gearing, of particularly large diameter, so that the undercarriage is fairly low and drag somewhat reduced.

Constructional Features.
The Vickers "Jockey," as the new machine is named, is of all-metal construction, the expression "all-metal" being in this case used in its proper sense, as the only parts of the machine not covered with metal are the tail surfaces. In the wing and fuselage the covering is of duralumin, and is part of the stress-bearing structure. **Wings.**—The monoplane cantilever wing has spars of duralumin (box section), built up and joined by riveting, while the ribs are tubular and the various

VICKERS "JOCKEY " INTERCEPTOR FIGHTER					
530 h.p. Bristol " Mercury " IV S.2					
Dimensions					
Length o.a. . . . .	..	..	..	ft.	in. metric.
Height o.a. . . . .	..	..	..	23	0 7,010
Wing span . . . . .	..	..	..	8	3 2,515
Wing chord . . . . .	..	..	..	32	8 9,956
Wing area . . . . .	..	..	..	5	3 1,600
				150 sq. ft.	13.9 m. ²
Weights					
Tare weight . . . . .	..	..	..	lb.	kg.
Pilot . . . . .	..	..	..	2,377	1 080
Petrol (51 galls. = 232 litres) . . . . .	..	..	..	180	82
Oil (5 galls. = 23 litres) . . . . .	..	..	..	392	178
Military load . . . . .	..	..	..	50	23
Gross weight . . . . .	..	..	..	371	123
Wing loading . . . . .	..	..	..	3,270	1 486
Power loading (530 h.p.) . . . . .	..	..	..	21.8 lb./sq. ft.	(107 kg./m. ²)
				6.16 lb./h.p.	(2.8 kg./CV.)
Performance (approximate)					
Altitude		Max. Speed		Climb.	
ft.	m.	m.p.h.	km./h.	mins.	
Ground level		182	293	—	
3,280	1 000	195	314	2.2	
6,560	2 000	210	338	4.0	
9,840	3 000	225	362	5.6	
13,120	4 000	238	383	7.2	
16,400	5 000	238	383	8.7	
19,680	6 000	238	383	10.7	
Initial rate of climb . . . . .	..	1,450 ft./min. (7.36 m./sec.)			
Absolute ceiling . . . . .	..	36,000 ft. (11 000 m.)			
Landing speed . . . . .	..	62.5 m.p.h. (100 km./h.)			
Duration (on 51 galls. = 232 litres)					
Altitude		Cruising speed		Time	Consumption
ft.	m.	m.p.h.	km./h.	hours.	lb./hr. kg./hr.
13,120	4 000	203	327	1.65	237 108



THE VICKERS "JOCKEY" INTERCEPTOR FIGHTER: Clean aerodynamic design, high wing loading and low power loading have between them achieved outstanding performance. The maximum speed is nearly 240 m.p.h.!

members joined together by plates and riveting. The covering is, as already stated, of duralumin sheet, and is of the patented Wibault type, the British rights for which are held by Vickers (Aviation), Ltd. The ailerons are, like the wing, covered with duralumin sheet. The wings are of R.A.F. 34 section.

Tail Surfaces.—Fin, tailplane, rudder and elevators are built up of duralumin tube, and fabric covered. Trimming gear is provided whereby the tailplane can be set to any desired angle for flying horizontally at any speed within the machine's speed range.

Fuselage.—Two forms of construction are employed in the fuselage structure. The front portion is of steel tube construction, with aluminium panel covering. The rear part is of *monocoque* construction, duralumin angle sections being used for the framework and sheet duralumin for the covering.

Undercarriage.—Of the divided type, the undercarriage has struts of steel tube, with bent axles of high tensile steel. Springing is by Vickers oleo-pneumatic units, and as the oil used is of the non-freezing kind, these units can be used in temperatures as low as 30 deg. C. below zero. Wheel brakes are fitted, and are of the Vickers patented hydraulic type, capable of being operated independently for purposes of steering the machine on the ground. An all-metal tail skid is provided, springing being by means of rubber blocks in compression.

Engine Installation.—The Bristol "Mercury" engine is supported on a hinged mounting, consisting of a duralumin plate carried on steel-tube struts. The petrol is carried in welded aluminium tanks, the main tanks being in the wings and the service tank in the deck of the fuselage. The total tank capacity is 62.5 galls. (284 litres), but normally the tanks are not filled to capacity. When more than 51 gallons (232 litres) of petrol is carried, the military load must be correspondingly reduced. The total

oil capacity is 7.5 gallons (34 litres), but for normal duration only 5 gallons (23 litres) is carried. The fuel is pumped from the main to the service tank, but from there it flows by force of gravity to the engine. A hand pump is provided for emergencies.

Cockpit.—The cockpit is, of course, of the open type, and is equipped with the usual instruments, armaments, etc., in addition to the flight controls. The instrument board contains the following:—Air speed indicator, lateral inclinometer, oil thermometer, altimeter, watch, compass, revs. counter, and oil pressure gauge. The standard armament consists of two Vickers .303 belt-feed guns firing "through" the propeller, the usual interrupter gear being fitted.

Considerable latitude in choice of equipment exists, but the following may be taken as a typical military load:—

Quantity.	Item.	Weight.	
		lb.	kg.
2	Vickers .303 guns	60	27
1 set	Interrupter gear (double)	18	8
2	Belts S.A.A. (1 200 rounds)	87	39
2	Gun sights	4	2
1	Safety belt	3	1
1	Irving parachute	20	9
1	Very pistol and 8 cartridges	7	3
1 set	Oxygen apparatus	20	9
1 set	Electrical heating	24	11
		243	109

As the permissible military load (with 51 galls. of fuel) is 371 lb., this list does not exhaust the equipment that can be carried within the machine's Acrobatic Certificate of Airworthiness, which is for a gross weight of 3,270 lb. (1 486 kg.).

THE ROYAL AERO CLUB OF THE UNITED KINGDOM

OFFICIAL NOTICES TO MEMBERS

General Council of Associated Light Aeroplane Clubs.—A meeting of the General Council was held at the Royal Aero Club, 119, Piccadilly, London, W.1, on Tuesday, January 26, 1932.

Present:—Col. Sir Joseph Reed (Newcastle-on-Tyne), Chairman; Bristol & Wessex Aeroplane Club (A. H. Downes Shaw, Capt. L. P. Winters); Brooklands Aero Club (Capt. H. D. Davis); Hampshire Aeroplane Club (W. L. Gordon); Hanworth Club (Col. The Master of Sempill); Herts & Essex Aeroplane Club (A. R. Frogley); Household Brigade Flying Club (R. L. Preston); Lancashire Aero Club (J. C. Cantrill and J. Sellars); Leicestershire Aero Club (R. C. Winn); Liverpool Aero Club (R. H. Thornton); London Aeroplane Club (H. E. Perrin); Midland Aero Club (Maj. G. Dennison); Newcastle-on-Tyne Aero Club (J. H. Boyd and B. M. Dodds); Norfolk & Norwich Aero Club (C. Gowing); Scarborough Aero Club (W. R. Baynes); Royal Aero Club (Lt. Col. M. O. Darby and Maj. A. Goodfellow); Harold E. Perrin, Secretary to the General Council.

Subsidy.—A general discussion took place as to the recommendations to be submitted to the Air Ministry that afternoon in regard to future subsidies.

Civil Airworthiness Committee.—Lt. Col. M. O. Darby was nominated to represent the General Council on the Civil Airworthiness Committee to be set up by the Air Council.

Calendar of Events, 1932.—The General Council considered a communication from the Air Council offering R.A.F. co-operation at three civil meetings during the year.

It was decided to allocate the R.A.F. co-operation to the following meetings:—

May 28.—Brooklands Aero Club, Brooklands.

June 18.—Hull Aero Club, Hedon, Hull.

July 2.—Portsmouth Municipal Aerodrome (Official Opening).

Royal Aero Club Racing Committee.—The following were nominated to represent the General Council on the Racing Committee of the Royal Aero Club:—

R. Ashley Hall (Bristol & Wessex Aeroplane Club);

Flt. Lt. D. W. F. Bonham-Carter (Royal Aircraft Establishment Aero Club);

Maj. A. Goodfellow (Lancashire Aero Club).

Offices: THE ROYAL AERO CLUB,
119, PICCADILLY, LONDON, W.1.

H. E. PERRIN, Secretary.

"Mechanical Tests on Aircraft Structural Components"

On Thursday, February 11, Mr. I. J. Gerard, M.Sc., Assoc.M.Inst.C.E., A.F.R.Ae.S., will read his paper before the Royal Aeronautical Society on "Mechanical Tests on Aircraft Structural Components." In his paper Mr. Gerard will give new methods of testing which have become necessary by the very nature of aircraft engineering as contrasted with the other forms of engineering, and deal with the types of tests which are required and the establishment of principles for subsequent general use in design as a result of tests. The lecture will be very fully

illustrated and will be delivered at 6.30 p.m. in the Lecture Hall of the Royal Society of Arts, 18, John Street, Adelphi, W.C.2.

The Paris Aero Show

THE 13th International Aero Exhibition to be held in Paris will be open during the period November 25-December 11, 1932. As in previous years the exhibition will be held in the Grand Palais in the Champs Elysees, and the closing date for application for space is April 30. Firms which make application before that date will have the benefit of priority in the choice of space.

FUEL ECONOMY

UNDER the title "Some Factors affecting the Range of Aircraft, with Special Reference to Height," a paper was compiled by A. E. Woodward Nutt, B.A., A.F.R.Ae.S., and Flt. Lt. A. F. Scroggs, B.A., D.I.C., R.A.F., and read before the Royal Aeronautical Society (with which is incorporated the Institution of Aeronautical Engineers) on January 28. The authors did not concern themselves with the effects of improved aerodynamic design on range, but confined their investigations to an examination of the part played by the power plant, and more specifically by the carburation and ignition.

The paper dealt at considerable length with previous information on the subject, and disclosed the somewhat surprising fact that even now there does not appear to be unanimity of opinion on the subject of whether or not it "pays to fly high."

The current use (or lack of use) of the altitude control by pilots came in for a certain amount of criticism, it being pointed out that probably the very name "altitude control" has kept pilots from using the device to obtain better fuel economy, often through a hazy fear that in some obscure way it might be bad for the engine. Ignition timing was important in securing good fuel economy, and contrary to general belief, ignition should be advanced as the throttle was closed.

Results were given of a number of flight tests made with a Vickers "Venture" and a de Havilland "Stag," and the latter part of the paper outlined likely future developments.

In conclusion, the authors summarised their paper as follows:—

"At the present time fuel is wasted and range curtailed by the use of unnecessarily rich mixtures. This is mainly due to insufficient use of altitude control.

"The range attainable by an aircraft to-day is largely in the hands of the pilot. Widely differing consumptions

are often obtained on the same aircraft when attempting identical conditions.

"In our opinion, limitation of the movement of the altitude control in aircraft might well be discontinued.

"The damage that can be caused to engines by the use of weak mixtures has been greatly exaggerated.

"It appears that, in general, modern water-cooled engines may be run on weaker mixtures with safety than may air-cooled engines.

"Weakening the mixture until a 3 per cent. drop in r.p.m. occurs in level flight has given the lowest consumptions on flight tests. This is in agreement with test bench experience.

"When running on weak mixtures it seems to be advantageous to advance the ignition as the engine is throttled.

"For really economical running, precise adjustment of the altitude control is required. The development of automatic A.C. is necessary to attain these conditions in routine flying.

"Improvements in carburation and distribution are needed, especially with a view to improving the economy when throttled.

"Under average conditions of flying, the mixture strength is so indefinite that it is impossible to predict with any accuracy the range at any height. This state of affairs is clearly unsatisfactory.

"The work done up to date indicates that as economy is improved, so range becomes more nearly constant with height. Theory indicates that for maximum economy range should not vary with height.

"For maximum range flight should be made at a constant indicated air speed at all heights. Hence it will always save time to fly high.

"Wind, by no means a negligible factor at the present time, is likely to assume even greater importance in the future."

"Swissair" Speeding Up

FROM Zurich it is reported that the Swiss air transport company "Swissair" plans to speed up its services to Vienna in the spring. On the Zurich-Munich-Vienna route the average speed of the existing service is, owing to the halt of 35 minutes at Munich, only about 77 miles per hour. Counting in, as one should do, the time taken in travelling from town to aerodrome by car, the complete journey from Zurich to Vienna occupies something over six hours. This brings the average speed of the journey (distance 380 miles) down to something like 62 m.p.h.

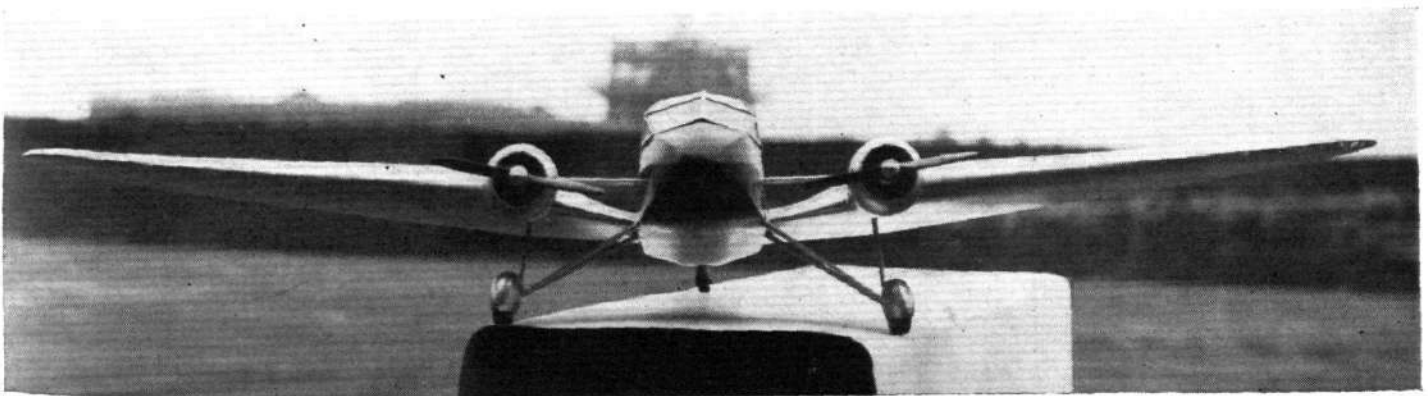
By putting into service new aircraft types capable of 150 m.p.h. cruising speed, and by reducing the halt at Munich from 35 to 10 minutes, the journey from Zurich to Vienna will be reduced to less than three hours. Allowing for the time spent in cars between towns and aerodromes, the air journey from Zurich to Vienna will be reduced to nearly one-quarter of the duration of the railway journey, and the machine, moreover, arrives in Vienna

some four hours before the train, giving business men that much extra useful time.

The machines ordered by "Swissair" for this service are, it is reported, Lockheed "Orions," with 575-h.p. Wright "Cyclone" engines. The machine will, it is hoped, carry considerable quantities of mail, and passenger accommodation will, therefore, be restricted to four seats.

The Klemm-Pobjoy

THE climb of this aircraft, which was described on page 90 of last week's FLIGHT, is in reality somewhat spectacular and not merely mediocre as the figures then quoted made it appear. It should, of course, have been 3,280 ft. in 4½ min. fully loaded. The 3 and 2 having inadvertently been changed round made out the climb as only 2,380 ft. for the same period. The Pobjoy engine is only rated at 75/80 h.p., but the gearing allows the use of an efficient airscrew, which no doubt largely accounts for this excellent performance.



LESSENING HEAD RESISTANCE. That the new monospar (2 Pobjoys) will be a clean aircraft is here very evident. The cut away wing-root, though by no means a new idea, has not been used of recent years and should, particularly in a twin-engined aircraft of this type, ensure effectiveness of the tail controls at all speeds. Even with the tail on the ground the pilot's view will, in this design, be completely unrestricted. (FLIGHT Photo.)

Private Flying & Gliding

LEICESTERSHIRE AERO CLUB

The annual general meeting of the Leicestershire Aero Club was held on Wednesday, January 27. Mr. W. Lindsay Everard, M.P., the club's President, presided at the luncheon preceding the meeting, which was held in the Oriental Hall. In moving the annual report, he made a most excellent speech, in which he said that, although the club had started in a small way, it was now becoming as important a body in aviation as it ought to be in Leicester. He voiced a plea for the municipal authorities to make up their minds to establish a municipal aerodrome. He referred to the fact that the city of Leicester was concentrating its energies in raking up images of the past by way of a great pageant, and he suggested that the money being put into this would be far more profitably employed in laying out the municipal aerodrome, together with Customs facilities for the Midland Counties, thus laying down a solid foundation from which people could extend their business by travelling by air. Mr. Everard said that it was hoped that Leicester would again be a control during the King's Cup race. He also announced that there would be another pageant during the coming year for the cripples of Leicester on an even larger scale than that of last year, while a new 32-seater machine would take up people on that occasion. The Lord Mayor, Alderman W. E. Wilfred, said that for his part he would do all he could to see that the scheme would be put into operation. Mr. Lindsay Everard was re-elected President, and presentations were made to Mr. Everard and Mr. Harry Purt. The latter was the club's first secretary, and was largely responsible for all the initial labour in getting the club going. Mr. Howard Bolton was re-elected Chairman, Mr. R. H. Brown and Mr. Sidney Brown, Hon. Secretaries, and Mr. B. Franklin, Hon. Treasurer.

The report of the Committee of Management showed the total membership of the club on September 9 last was 925, of which 152 were pilot members. Nineteen new "A" licences were granted during the year. The total flying time was 1,021 hr. 25 min. The club's equipment is now two all-metal "Gipsy Moths," but it was pointed out that they were particularly grateful to the President for the use of three of his private machines. Reference

was made to the generous donation of Mr. Everard which had enabled the whole of the aerodrome buildings to be painted white, an action which has been of great assistance to visitors in locating the aerodrome [especially when arriving near dusk, as we have done.—ED.]. A review of the events of the past year was then read; this included the Hinckley Aviation Day on June 10, an At Home on June 13 and 14, a Cripples' Outing on June 27, the King's Cup Race on July 25, Night Flying at Ratcliffe on August 1 and 3, special Divine Service on August 9 at Ratcliffe, besides a series of competitions arranged by the Club and held from time to time. All of these, together with the second Annual Ball on February 27, were reported in FLIGHT and do not need further mention on this occasion.

CHELMSFORD AND DISTRICT CLUB

Aviation Transport, Sales & Service, Ltd., have established a flying club at Chelmsford, the formation of which was announced in FLIGHT recently. The aerodrome is an exceptionally open one, and is situated slightly north of the Broomfield Road, about 2½ miles distant from the centre of Chelmsford. The telephone number of the club is Broomfield 38. This venture is merely one of a series instituted by Mr. G. W. Higgs. At Chelmsford he has with him Mr. H. M. Talbot-Lehmann, and the lines upon which they are working appear to offer an excellent chance of success. The aerodrome itself is of some 50 acres in extent, and the minimum length of run being in the neighbourhood of 700 yd. One great advantage of the site is that all the approaches are absolutely open, and the company holds an option on all the surrounding ground, which can either be used to extend the area of the aerodrome or for the establishment of factories and similar businesses. At the present time a large barn has been fitted up as a hangar, workshop and offices, but work is shortly being started on a club-house entirely new in its conception. This, it is hoped, will appeal to the inhabitants of Chelmsford as a social rendezvous for many occasions. With this end in view, it is being built on attractive, low, semi-timbered lines, and will have, besides a well-fitted grill room, tennis courts and probably a bathing pool. By this means it is hoped to attract people who will

INDIAN FLYING CLUBS

SUMMARY OF THE WORK OF THE SIX SUBSIDISED INDIAN FLYING CLUBS FOR THE PERIOD JANUARY TO SEPTEMBER, 1931.

Club.	Membership.			Aircraft.		Ab Initio pupils qualified for "A" Licence.		Flying Hours.		
	Total.	Euro-peans.	Indian.	Number	Type.	Euro-peans.	Indian.	Instruc-tional.	Other Flying.	Total.
Delhi ..	304	67	35	4	Moth	6	5	h. m. 223 30	h. m. 714 15	h. m. 937 45
†Cawnpore..	61	7	3					87 05	135 55	223 00
†Lucknow ..	51	6	13					66 50	12 05	78 55
Bombay ..	255	44	64	4	Moth ..	7	10	583 30	1,005 50	1,589 20
Madras ..	237	19	11	3	2 Moth	8	4	439 10	366 10	805 20
Bengal ..	370	96	39	3	1 Puss Moth					
				3	Moth ..	9	7	729 55	813 05	1,543 00
Karachi ..	160	54	72	3	Moth ..	6	15	427 55	706 45	1,134 40
Punjab* ..	330	38	205	3	Moth ..	7	6	219 20	411 05	630 25
Total ..	1,768	331	442	20		43	47	2,777 15	4,165 10	6,942 25

* To June 30 only.

† Branches of Delhi Club figures for July to September only.

eventually thereby become interested in flying. The club are particularly lucky in having obtained the services of Mr. A. W. Fairlie as their ground engineer. Mr. Fairlie is also a parachute demonstrator, and he will give displays at the many meetings which the company are organising round the East Coast during the forthcoming year. Their go-ahead programme, though, does not by any means stop here, for locally they have arranged particularly favourable rates at the County Hotel, Chelmsford, for those staying in the district, while farther afield it is hoped to establish other clubs on even more ambitious lines, and in connection with other ground sports, of which we shall be able to publish more details later. In connection with the displays we have mentioned, a Westland "Wessex" is being chartered, and will be available for private hire and also for joy riding as and when required.

HERTS AND ESSEX AEROPLANE CLUB

The annual dinner and dance of the Herts and Essex Aeroplane Club will be held in the Holborn Restaurant on Thursday, February 11. Col. Shelmerdine and the Master of Sempill have promised to be present, and all those attending are assured of a first-class entertainment. The slightly improved weather has raised the number of flying hours during the past week, while the cheap flying rates are proving a great attraction to new members. Within the next few weeks the club is to have a technical school which will teach practical aeronautical engineering. The secretary will shortly announce an insurance scheme to cover all members and accidents while flying.

AT BROOKLANDS

Despite the bad weather during the past week, 35 hours' flying have been put in, five of which have been on the blind-flying course, a popular type of instruction which the following are now taking:—Messrs. Maurice Jackaman, John Joss, Ian Barr and R. Richards. The rates charged for this course will be only those of normal school flying. The machines are fitted with Reid & Sigrist turn indicators and all standard R.A.F. instruments. Most of the aircraft in for reconditioning, of which there are a large number at present in the repair shops, are having "doughnut" wheels, as it has been found that these save the undercarriages from damage. A further course of evening lectures on Navigation, Meteorology and Theory of Flight will start at Chelsea on February 8, the inclusive fee for which will be £4 4s.; further particulars can be obtained from the College of Aeronautical Engineering, Sydney Street, Chelsea. May 28 should be noted as that date which has been fixed for the Brooklands Air Display.

THE ROYAL NAVAL FLYING CLUB AT HANWORTH

Hanworth Club welcomed members of the Royal Naval Flying Club at a dinner and dance held at Hanworth on January 22. Hanworth is the London headquarters of the R.N.F.C., and many of its members have already done considerable flying there. Amongst those present were Admiral Sir Cyril Fuller and Lady Fuller, Rear Admiral the Hon. P. Drax and Mrs. Drax, Col. the Master of Sempill and Mrs. Forbes Sempill, Capt. L. M. Boothby, R.N., Capt. C. E. Turle, R.N., Wing Com. and Mrs. Louis Greig, Com. L. D. Mackintosh, R.N., Sqd. Ldr. and Mrs. Bert Hinkler, Flt. Lt. and Mrs. G. H. Stainforth. The occasion was one of much gaiety, and the dance was undoubtedly one of the most enjoyable yet held at Hanworth. Besides the arrangements already announced, the R.N. Club has now completed negotiations whereby its members will have flying facilities with the Maidstone Aero Club at West Malling Aerodrome.

FROM THE CLUB JOURNALS

In the West

"Wessex Airways" gives us the somewhat depressing information that the evening lectures are to be discontinued at Bristol. Furthermore, the reason being that there has been insufficient attendance to warrant their being carried on. It must be very disheartening to those responsible when such an admirable scheme as this has to be shelved. Private owners and club pilots are usually very keen indeed to know more about air navigation and the handling of their aircraft, but perhaps those at Bristol are already learned enough? Blind flying, or more correctly instrument flying, will now be possible at Bristol, for they have had a Moth fitted with a "bonnet," turn indicator, fore and aft level, and extra compass. Instruction in this machine will be at the standard rate of £2 10s. per hour, and completion of the course will entitle the member to a certificate stating that he has qualified in Blind Flying at the Bristol Airport. Night landings will now be possible at this aerodrome, as emergency equipment has been installed. Unless previous notice has been given of the intention to make use of these facilities the pilot who wishes to land should circle the aerodrome, and the watchman will then switch on the obstruction lights and lay out suitable flares.

In Scotland

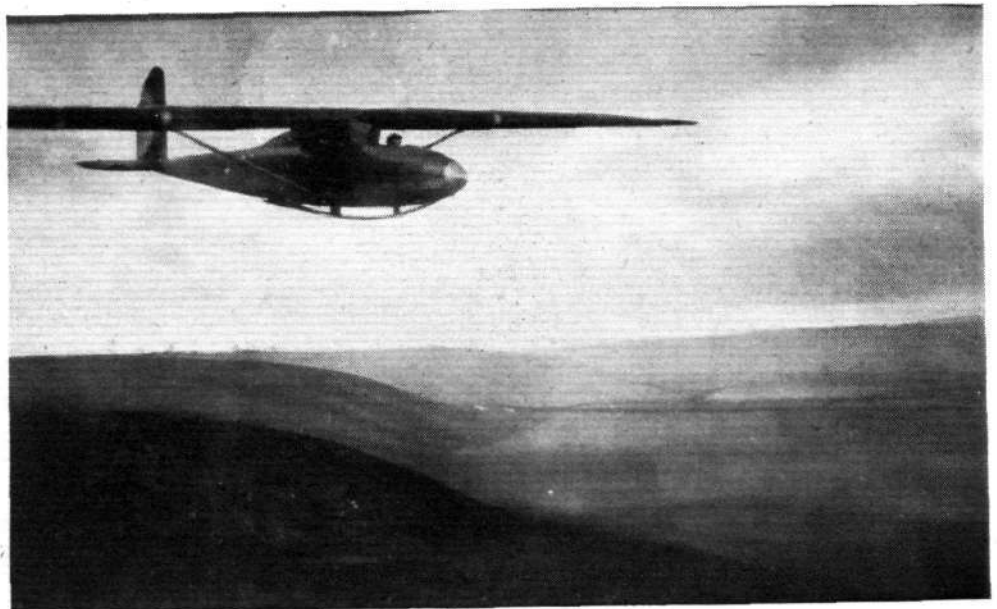
"The Scottish Flyer" becomes quite serious this month, and its humorous pages are leavened with much sound common sense and good advice. There are articles on the weather, on the finer points of handling an aircraft, and on safe methods when starting up. The usual extensive section is devoted to flying statistics, from which we learn that out of the 31 days in December only three could be called fair weather, while 24 were of the kind on which it was impossible to fly; despite this fact, however, the flying time for the month was 36 hr. 5 min.

From Northampton

The Editor voices a problem which has assailed the minds of almost every club secretary in this month's "Sywell Windstocking," when he discusses the somewhat ironical fact that the private owner members unwittingly take away the livelihood of the club by flying their own machines—this is the type of domestic grievance which may well cause a lot of trouble. We learn, also, that there is a Club Continental Cruise being organised for the coming spring. This is an admirable way of gaining invaluable experience without the risk attendant on those who set out alone. Among the latest private owners at Sywell is Miss Evadne Flower, who has bought the club Moth G-AAWU; this now makes the total of privately-owned aircraft at this club up to ten.

GLIDING AT STRATHEARN

A meeting was recently held in the Institute, at Crieff, when it was decided to form a Gliding Club for the Strathearn district, to be named the Strathearn Gliding Club. Capt. James MacRosty was elected President, while the subscriptions for flying members were fixed at £1 1s. and for associate members 10s. 6d.



The Cloudcraft "Phantom" soaring above the London Gliding Club site at Dunstable.

Airport News

The Shushan Airport

*An Ambitious Scheme
for New Orleans*

By E. ALLEN RICE

TWELVE minutes from the City Hall, on the south shore of Lake Pontchartrain, New Orleans, is building one of the finest airports in the world, which will accommodate every type of modern aeroplane and seaplane. When completed, it will meet the requirements of the Department of Commerce for an A-1-A rating.

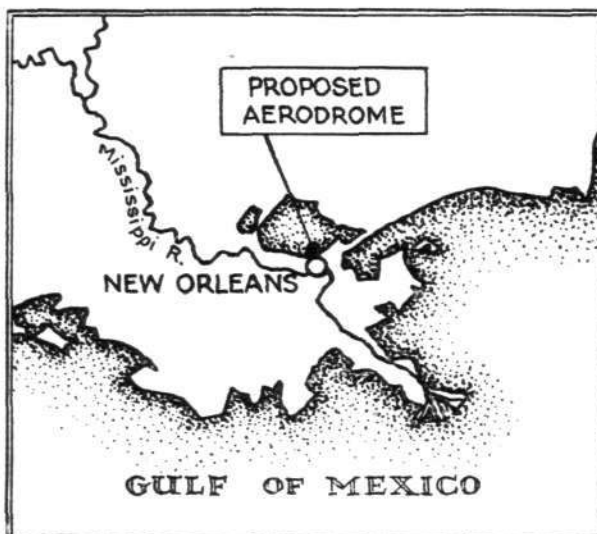
Concrete mixers and pile drivers are building a bulkhead into the lake enclosing a triangular-shaped area of 310 acres, a mile and a-half along the shore and over two miles around. Dredges are working day and night filling the inside of this bulkhead with sand from the bottom of the lake.

The State of Louisiana, through the Orleans Levee Board, is financing this \$2,000,000.00 development. To Mr. A. L. Shushan, President of the Orleans Levee Board, goes the credit for the accomplishment of a task more difficult than is usually encountered in even so large a project. His far-sightedness and persistent efforts in overcoming apparently insurmountable legal obstacles has been rewarded by the beginning of actual construction. In his honour the airport has been named the Shushan Airport.

Experienced Engineers Chosen

Plans for this gigantic undertaking have been designed

and will be executed by the National Airport Engineering Co., Ltd., of Los Angeles, Cleveland, and New York. This company was selected as the most experienced and responsible organisation for this work, after months of investigation by the Orleans Levee Board.



New Orleans, showing the location of the Shushan Airport.

Mr. William E. Arthur, President, is one of the oldest and most experienced airport engineers in the United States, having designed many large and important airports in the United States and foreign countries. His organisation includes some of the foremost engineers and aeronautical men in the aviation world. Some of these are:— Col. Eddie V. Rickenbacker, Maj. James H. Doolittle, Col. John H. Jouett, E. W. "Pop" Cleveland, Bernt Balchen, and Col. Charles Wayne Kerwood. The combined knowledge and experience of these men has gone into the plans and designs for the Shushan Airport. John Klorer, Chief Engineer of the Orleans Levee Board, from his knowledge of engineering problems under local conditions, is giving valuable assistance in the design and construction of the airport.

Five Year Building Programme

A five-year building programme has been planned and designed for the Shushan Airport, which anticipates the essential requirements for an airport of this magnitude



SHUSHAN AIRPORT: This drawing shows a bird's eye view, from the north, of New Orleans and the Shushan Airport on Lake Pontchartrain.

over the ensuing five years. The initial development, to be completed within fourteen months, calls for an expenditure of \$2,000,000.00. It is designed adequately to supply the immediate needs of the port. Under this development will be constructed three units of the seven units designed for the Administration building, 360 ft. x 90 ft., two storeys high, with a control tower four storeys high, to cost \$190,000; two hangars, 200 ft. x 120 ft.; Maintenance and Emergency building, 60 ft. x 128 ft.; Transformer building, 40 ft. x 22 ft.; Repair and Overhaul building, 100 ft. x 120 ft.; together with runways, lighting facilities for night flying and complete radio equipment.

Typical New Orleans Architecture

Spanish Renaissance architecture was chosen for the Administration building, after careful study and preliminary sketches of different types of architecture. This period of architecture touches upon the romance of Old New Orleans, and, at the same time, is very practical and attractive, harmonising admirably with the other buildings of the group. It is practical in that it lends itself to additions without detracting from the original beauty. The exterior walls are of hand-finished plaster with carved stone panels and wrought-iron grided balconies. This ornamentation is treated lightly, and not overdone. The roof is of Spanish tile, and all exterior sashes and doors are of Louisiana Cypress.

The landscaping has been designed to harmonise with the Spanish Renaissance architecture and to give to the airport an artistic and beautiful appearance from both the ground and the air. This design shows the driveways lined with low shrubs and tall Cypress trees. The parkway in the centre of the main driveway will be planted with red and yellow flowers, giving to the entrance a bright and colourful Spanish atmosphere. Where the driveways converge in front of the main building, there will be a large, low, graceful fountain of stone. Appropriate statuary, in the small courts on either side of the main entrance, and the low shrubs and tall Cypress trees will form a pleasing picture against the dull cream tones of the buildings.

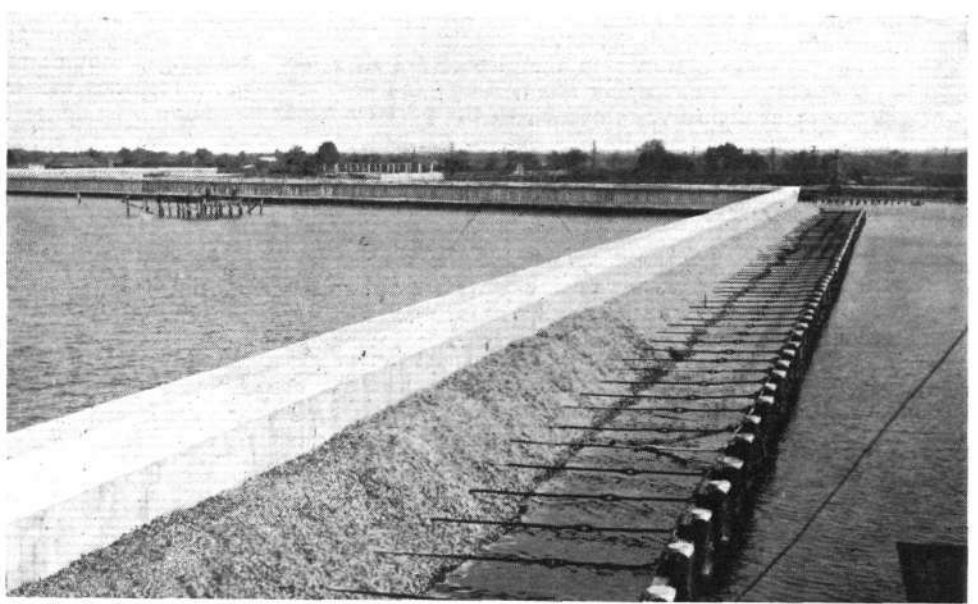
Value of Preliminary Surveys Shown

As the first step in the development of this project, the National Airport Engineering Company's engineers made surveys upon the ground and from the air, with aeroplanes especially equipped for this type of work, to determine the type of airport grades and levels and the position of runways for landing and take-off. These surveys are important, inasmuch as commercial planes of the future will be high-speed machines, cruising at 175 to 200 miles per hour, reaching the port in varied weather conditions. The airport has been designed so that the approach to the port can be made with the minimum of hazards and obstructions. Studies were made of the meteorological conditions of the airport site and surrounding terrain at this time, and from data accumulated over a period of years. In view of the extremely heavy rainfalls in this location, meteorological surveys are an important part of these preliminary investigations.

These surveys revealed one of the most difficult drainage problems in airport engineering, due to the varied elevations of water levels at and surrounding New Orleans. This city lies below the Mississippi River and below the high-water mark of Lake Pontchartrain. The airport is being constructed so that the surfaces of the airport will be above these water levels.

Shell Drain Solves Problem

Twenty-five feet inside the main bulkhead, there is being constructed a concrete wall 6 ft. lower than the main bulkhead. The area between the bulkhead and the wall is being filled with oyster shells. The porosity of the oyster shells will permit the water drained from the surface of the airport to this area to be carried off to the lake through



A view of one of the shell drains and concrete bulkheads (looking north-east) under construction for the Shushan Airport.

weep holes in the outer bulkhead. In addition, a subsurface drainage system has been constructed to carry subsurface waters from various parts of the airport to the Drainage Canal, a mile south of the airport.

Four Runways

From the aerial surveys data pertaining to the direction and conditions of prevailing winds, the wind-rose of the port was determined, from which the direction and type of runways were planned. There will be four runways, each 300 ft. wide; one will be parallel to the east bulkhead for 4,000 ft.; another will parallel the west bulkhead for 3,800 ft. A taxiway connects the ends of these two runways, completing the horseshoe. At right angles to these runways are two runways 3,600 ft. and 3,700 ft. respectively, forming an X at the opening of the triangle. This design enables planes to land or take off into the most advantageous wind and provides the utmost in safety and efficiency. It also controls the movement of planes on the field preparatory to take-off and after landing.

Graceful Arrangement of Buildings

The buildings of the Shushan Airport will be located in a graceful curve at the opening of the triangular-shaped bulkhead. The Administration Group, including Administration building, Maintenance and Emergency building, and Transformer building, is strategically situated in the middle of the group of buildings to facilitate the efficient handling of aerial and highway traffic. Extending at a slight angle on either side of the Administration Group are the hangars—four on one side and six on the other. At either end of the rows of hangars are the Repair and Overhaul Shops, connected by taxiways to the hangars. A short distance from the south hangar group lies the Seaplane Base, protected by the bulkhead, with its own station building, two hangars, ramps and float. The grouping of the various units reduces the cost and maintenance of operations to a minimum, and increases the architectural symmetry of the entire group.

Two driveways will lead from the main highway to the airport buildings. A two-way main driveway—with parkway in the centre—leads direct to the administration building. The other driveway runs in an arc past the buildings, to the highway, forming entrances at both ends of the airport. Trees and shrubbery typical of New Orleans will beautify the driveways, and a lawn will extend from the hangars to the driveways.

Automobile and Aeroplane Parking Solved

On the field side of the buildings, paralleling the east and west runways, are taxiways and parking facilities for aeroplanes. These taxiways butt the edge of the hangars. Between each two hangars are large paved courts, 75 ft. x 200 ft. The hangars are placed at right angles to the taxiways, with large doors opening into the court. This placement of the hangars increases the hangar area, and eliminates dust and dirt from the field.

Parking facilities for 3,740 cars has been provided in close proximity to the Administration building.

Adjoining the main entrance to the airport are sites for a large hotel, club-house, display room, shops and stores.

Across the main highway, connected to the port by road

and aeroplane ramps, will be a large aircraft industrial area. Aeroplane factories, storage buildings, assembly buildings, motor manufacturing plants, and aeroplane parts factories will be located there.

(To be concluded.)

CROYDON

THE weather has seriously affected the regular services during the past week, and many have been cancelled. For once, the home country was not entirely to blame—fog has hung persistently on nearly all the routes over the Continent. At the same time, many stout efforts have been made to maintain the services, and in several cases the pilots have beaten the elements.

On Tuesday, that great American humorist and film star, Mr. Will Rogers, flew to Paris on the 12.30 p.m. "Silver Wing." By a curious coincidence, the pilot on this service was also Mr. Will Rogers, another great humorist. The last-named Mr. Rogers is better known as a pilot, but his Cockney humour is as funny in its way as that of his distinguished passenger. They both appeared to appreciate the coincidence of their names, and were filmed together, causing much merriment by their remarks.

On the Imperial Airways Cape route the inward-bound machine was forced down between Salisbury and Broken Hill several days ago, and was damaged. Fortunately, the crew were unhurt. The outward-bound machine was also damaged while taking off at Salisbury, and a relief machine took the passengers and mail on. This in its turn made a forced landing owing to a rainstorm, but was able to proceed on its journey after the storm had passed—an unfortunate series. Mr. Gordon P. Olley, Imperial

Airways "special" pilot, is hurrying out on an Avro X. Mention of Avro X's, these machines are now carrying fully-qualified wireless operators.

Several Imperial Airways mechanics are now undergoing instruction for their pilot's licences, and are being trained by British Air Transport, Ltd. I understand the company are advancing the training fees, to be repaid by instalments from their salaries after they have passed their tests. Mr. Messenger has already flown solo, after only two hours' dual instruction. It is obvious these men, after hundreds of hours' flying as flight engineers, must know the art of flying, and, personally, I think they will make very fine pilots. It is pleasing to know they are being given the chance they all desire. This was advocated in these notes some time ago. At least, it gives the mechanics something to work for—an opportunity to become a pilot. Air Union have several old mechanics who are now pilots, and are worthy of the faith their company placed in them.

The work of laying the cable for the new radio beacon is proceeding. If all claimed for the new beacon proves to be correct, it will be a very wonderful invention.

The French Ambassador in London, M. de Fleriau, flew to Paris from Croydon on Monday.

The traffic figures for the week were:—Passengers, 449; freight, 27 tons. P. B.

MUNICIPAL AERODROMES

THE following is a report issued by the Air Ministry on the progress of municipal aerodromes up to December 31 last.

Towns which have licensed aerodromes (12)—

Blackpool	Ipswich	Nottingham
Bradford	* Leeds	Plymouth
Bristol	Liverpool	Portsmouth
Hull	Manchester	* Stoke

* Temporary licence.

Towns which have purchased sites (8)—

Brighton	Doncaster	Worthing
Cardiff	Leicester	Walsall
Carlisle	Southampton	

Towns which have reserved sites in their Town Planning Scheme (14)—

Abergavenny	Lytham St. Annes	Southwold
Basingstoke	Maidstone	Weston-Super-Mare
Blyth	Milton U.D.C.	Winchester
Chorley	Rotherham	York
Littlehampton	Skegness	

Towns which have had sites inspected (83)—

Aberdeen	Bridlington	Gateshead
Aberystwyth	Burnley	Glasgow
Aldershot	Burton	Gloucester
Aylesbury	Cambridge	Grantham
Barnet	Cheltenham	Greenock
Barnsley	Chester	Grimsby
Bath	Colchester	Gt. Yarmouth
Bedford	Crewe	Guildford
Belfast	Derby	Halifax
Bexhill	Eastbourne	Harrogate
Birmingham	Edinburgh	Harwich
Bognor	Exeter	Hastings
Bournemouth	Falkirk	Hereford

Huddersfield	Northampton
Huntingdon	Norwich
Huyton	Northam, Devon
Inverness	Peterborough
Irvine	Poole
Kidderminster	Rochester
Leek	St. Albans
Lincoln	Scarborough
Middlesbrough	Sheffield
Middleton	Slough
Morecambe	Southend
Motherwell	Southport
Newcastle	South Shields
Newport (Mon.)	Stirling
Newton Abbot	Stratford

Swansea
Taunton
Tynemouth
Walthamstow
Warrington
Warwick
Wellingborough
West Bromwich
West Hartlepool
Weymouth
Widmermere
Wolverhampton
Woking
Worcester

Towns which are awaiting inspection of sites (3)—

Birkenhead	Gravesend	Witney
------------	-----------	--------

Towns which have displayed interest in aerodromes other than above (52)—

Airdrie	Hamilton	Redruth
Axbridge	Haverford West	Renfrew
Barrow	Haywards Heath	Rochdale
Bolton	Kingston	Rugby
Buckie	Lancaster	Salisbury
Burry Port	Llandrindod Wells	Shrewsbury
Caerphilly	Loughborough	Sunderland
Cannock	Luton	Thornton, Lancs.
Chesterfield	Mablethorpe	Truro
Ceometry	Merthyr	Wadebridge, U.D.C.
Darlington	Neath	Wallasey
Douglas, I. of M.	Newtownards	Walton-on-Naze
Dover	North Berwick	Wigton U.D.C.
Dundee	Nuneaton	Winsford
Dunfermline	Oxford	Wrexham
Durham	Perth	Yeovil
Folkestone	Pontypridd	
Gillingham	Pwllheli	

British Aircraft to be Built in Norway

AN important contract has been concluded between the de Havilland Aircraft Co., Ltd., and the Norwegian Government under the provisions of which the D.H. "Tiger Moth" will be built in Norway. The "Gipsy III" engines with which the "Tiger Moth" is fitted will be imported from England, but the complete aeroplanes will be entirely constructed in the State Military Aircraft Factory at Kjeller. The aeroplanes are to be used for training duties. The adoption of the "Tiger Moth" by Norway is another tribute to the credit of British aircraft and follows important contracts secured by English constructors recently in Belgium, Portugal, Sweden and Brazil.

France and Rolls-Royce Aero Engines

A PARTY of technical officers of the French Air Ministry—including M. Caquot, Directeur Générale de Service Technique des Forces Aériennes, Col. Tetu, a senior technical officer in the French Air Force, and M. Martinot-Lagarde, Chief Engineer of the Technical Branch, French Air Ministry—arrived in England on February 1 in connection with the proposed manufacture under licence of the Rolls-Royce "Kestrel" aero engine in France. During their stay visits were arranged to the Rolls-Royce works at Derby, No. 12 (Bomber) Squadron, R.A.F., at Andover, the Fairey Aviation Co.'s works at Hayes, and the Hawker Engineering Co. at Kingston.

Air Transport

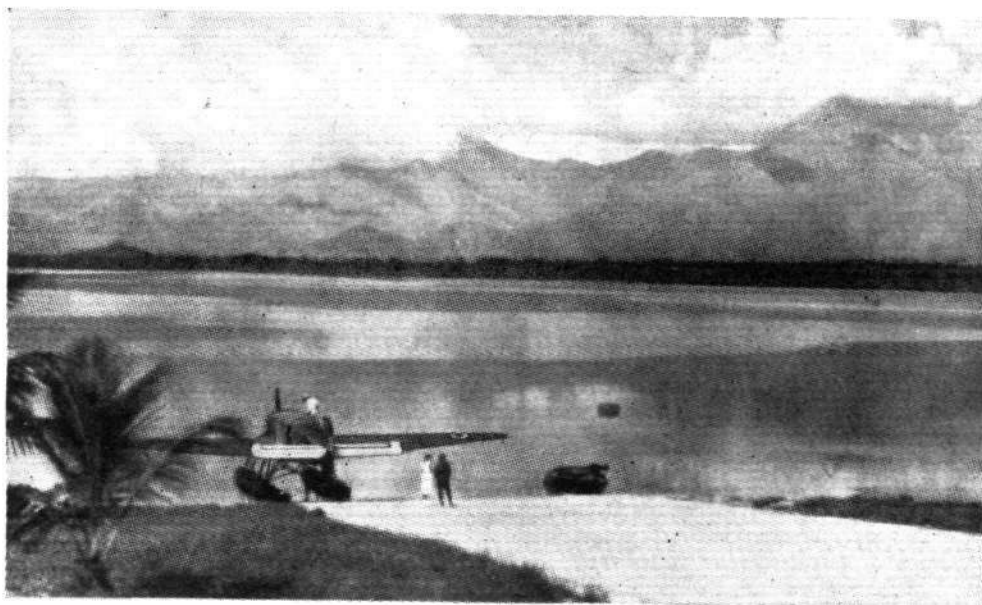
JUNKERS IN THE TROPICS

JUNKERS all-metal aircraft have been used with the greatest success in all parts of the world, amongst which may be mentioned both Venezuela and New Guinea, while the "Scadta" have been operating since 1919 in Colombia from Barranquilla, inland, up the river with Junkers seaplanes.

In Venezuela, back in October, 1930, General Gómez realised the exceptional suitability of the country for seaplanes, and accordingly one was sent out from Dessau specially fitted for the job of investigation.

The cabin was made, in so far as possible, mosquito-proof, and the engine provided with such extras as are necessary for satisfactory running in tropical heat. The aircraft was unloaded at Puerto Cabello and completely erected in two days, despite the extreme heat and trying conditions. A great deal of work was done, firstly in training the personnel and secondly in making suitable anchorages and building a hangar. This latter was of the Junkers "Lamellandach" type, and our illustration shows this in the course of erection in the Boco del Rio.

This hangar was erected under the guidance of a German engineer with local labour in exactly ten weeks, an



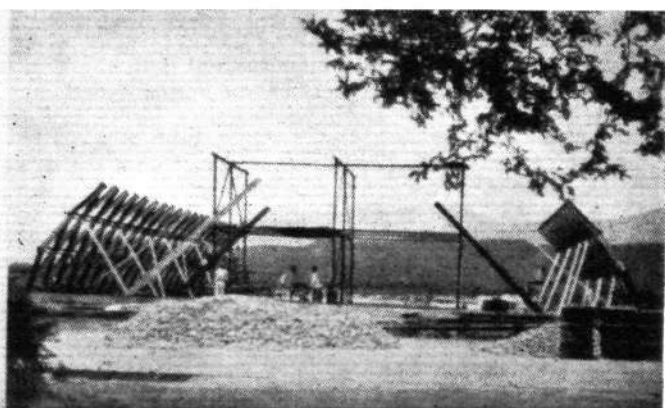
The Junkers W.34 "Bolivar" (550 Hornet) at Punta Palmita.

excellent piece of work when it is remembered that the conditions were even more trying than for erecting the aircraft, as the terrific heat often made it impossible to handle the metal parts without protection for the hands.

In New Guinea, Guinea Airways have carried many hundreds of tons of plant up to the gold fields in the specially built Junkers G31. The size of the cargo space may be judged from the illustration showing a Morris-Cowley car being loaded for the trip.



A Morris-Cowley being transported by a Junkers G.31 to the Lamella type hangar under construction at Boca del Rio gold fields in New Guinea.



and used to house the W.34 "Bolivar."

Civil Aviation in India

WE have from time to time briefly recorded the disappointing history of air transport in India. The air transport programme in no other country has been hit so hard by the almost universal economic depression as has the Indian programme. It may be convenient to recapitulate the recent course of events up to date.

Mr. F. Tymms, M.C., took over the office of Director of Civil Aviation from Col. Shelmerdine on February 22, 1931, and succeeded to a very unenviable heritage. At the moment, however, all looked bright. It really seemed that the long lethargy of India in the matter of civil flying was on the point of being brought to an end. Col. Shelmerdine had left behind him a programme for the inauguration of an Indian State Air Service which would have done great credit to India, and would certainly have been very advantageous to Indian commerce. It looked as if Mr. Tymms was to be the fortunate man who was to bring this programme to fruition.

The civil aviation budget for the year amounted to Rs. 35,77,000. Of this, about 10½ lakhs were to be spent on the State Air Service between Karachi and Calcutta, of which Mr. N. Vincent was appointed manager. The programme provided for night flying on the Karachi-Delhi section, and stops were to be made at Jodhpur, Delhi, Cawnpore and Allahabad. The result was to be that mails would be delivered in Calcutta about 24 hr. after their arrival in Karachi. The train service from Karachi to Calcutta takes about 64 hr. On the summer time table of Imperial Airways a letter from London would reach Calcutta in 6½ days, which may be described as gratifyingly quick work, and an enormous improvement on the old time of 17 days by steamer to Bombay and train on to Calcutta. It is worth while putting this programme on record even though it has been postponed for the present; for India presumably will not always remain in the economic doldrums, and the day must come when mails will be flown all the way to Calcutta. This programme

may then be revived, whether it is operated by the Indian Government or by a private company.

The main aerodromes at Karachi, Delhi and Dum Dum (Calcutta) were provided with hangars and with wireless and meteorological facilities. Karachi was declared a Customs aerodrome, as were Akyab, Rangoon and the R.A.F. landing ground at Victoria Point, all the last three being on the Calcutta-Rangoon extension. At the aerodromes of Karachi, Hyderabad (Sind), Jodhpur and Delhi, where night landings were to be expected, full lighting equipment was installed, namely, a 5 kw. revolving flood light on trails, boundary lights, obstruction lights and illuminated wind indicator. Emergency landing grounds were prepared at Uterlai, in Jodhpur State, and Badhal, in Jaipur State, which were to have each a 3-kw. beacon and other lights. It was proposed, moreover, to erect unattended 3-kw. revolving shutter beacons about 60 miles apart on the stretches Hyderabad-Uterlai and Jodhpur-Badhal. The country between Badhal and Delhi is hilly, and there it was proposed to instal five 150-kw. optical beacons to be maintained and operated by the railway staff. For lighting this section of the route a sum of Rs. 6,22,000 was set apart.

Four Avro 10 aircraft, each with three "Lynx" engines, were ordered. Three Indian gentlemen who had received training in England as holders of Government of India scholarships, were appointed as aerodrome officers at Delhi, Allahabad and Karachi. Subsequently aerodrome officers were also appointed at Dum Dum and Rangoon.

Bombay does not lie on the main east-west route, but it is the second most important commercial city in India, while Madras ranks third in the list. An airway running Karachi-Bombay-Madras would be the most important branch off from the main line. The Juhu aerodrome at Bombay is apt to disappear under water during the monsoon season, and a sum of over three lakhs was set apart for raising the surface of Juhu.

Mr. Tymms had only been D.C.A. for four months when all these rosy prospects were dashed to the ground. The Retrenchment Committee was instructed to review the civil aviation programme, and work was accordingly suspended, except on the four Avro aircraft which had been ordered. Ultimately, the civil aviation budget was reduced from 35½ lakhs to a little over 8½ lakhs. The Indian State Air Service was abandoned for the time, and naturally the lighting of the Karachi-Delhi section was also given up. Two of the Avro machines have been sold to the Egyptian Government—as already recorded in FLIGHT—and one has been handed over to H.E. the Viceroy for official tours. The fate of the fourth has not yet been disclosed. All Government civil aerodromes were placed on a maintenance basis. The allotment for wireless services was cut down from Rs. 4,13,000 to Rs. 3,50,000.

The contract with Imperial Airways for flights between Karachi and Delhi expired on December 29, 1931, and would not have been renewed in any case. An arrange-

ment has been made with the Delhi Flying Club whereby the latter takes over charge of Delhi aerodrome (the Government aerodrome officer being transferred), and will for the time being carry the mails in a "Moth" between Karachi and Delhi. This entails one flight in each direction every week. Passengers will not be carried. A new "Moth" was ordered from the de Havilland Aircraft Co. to carry on this service. It has been stated, and it applied to the first flight, that the pilot is to be an Indian. The west-bound mail will stop for the night at Hyderabad. An arrangement has been come to with the railway whereby there will be checking points every 100 miles, so that the progress of the machine can be followed, and, in case of need, a relief machine can be despatched with the minimum of delay. The "Moth" which has been ordered for this service was to have a pay-load of 350 lb. of mail matter. This should be ample, as, according to the Delhi correspondent of the *Statesman*, the volume of mail, though steadily growing, has only reached an average of about 100 lb. weekly from Europe, of which about half was deposited at Jodhpur for despatch by train to Bombay, while the rest was brought on to Delhi. Bombay was not able to get much advantage from the homeward air mail, owing to the railway timings, so that the bulk of the homeward mail came from Delhi and amounted to about 50 or 60 lb. a week. A great swelling in the weight of mail matter was to be expected as soon as the airway was extended to reach Calcutta; and it is, indeed, grievous that the time for this extension to come into being has had to be postponed. Without an air service across India to the chief business city of that country, the air mail to India is of very limited utility, and that more to the Government than to the commercial community.

Meteorology affects all countries, and the curtailment of the work of the meteorological stations in India is of general interest. From January 1 of the present year weather forecasting was restricted to the centres at Karachi and Calcutta, and the forecasting from Delhi and Rangoon was discontinued. The issue of weather reports from Madras and of weather data from Karachi by short wave broadcast was also stopped. The modifications are given in detail below:—

- (a) The Gaya W/T. and D.F. stations were closed.
- (b) The Delhi D.F. station was closed.
- (c) The Allahabad D.F. station was closed.
- (d) The W/T. and D.F. stations at Chittagong, Akyab, Sandoway and Bassein were to be completed and opened with a skeleton staff.
- (e) The modification of the Rangoon W/T. and D.F. stations for aviation were to be completed and opened for air traffic with a skeleton staff.
- (f) The proposed modification of the Victoria Point wireless station so as to serve aircraft will not be carried out.

Cape Air Mail Troubles

FATE has been unkind to the initial operation of the regular through air mail service of Imperial Airways between Croydon and Capetown, for a series of irritating minor mishaps has occurred to both the first outward and the first homeward services. First of all the outward mail from Croydon was delayed at Nairobi, and later, on or about January 30, the *City of Baghdad* encountered a violent rainstorm between M'beya and M'pika and landed until the storm was over, proceeding some time later for Broken Hill. Meanwhile, the *City of Basra*, with the homeward mail (Dep. Capetown January 25) was damaged while taking off from Salisbury—one of the wheels taking the place of a previously-removed anthill. The mails were transferred to the *City of Delhi*, which proceeded northwards, only to be forced down a little later by another violent rainstorm 40 miles south of Broken Hill. This time, however, the pilot landed in swampy ground and the machine was bogged, so the mails had to be taken overland to Broken Hill where they were transferred to the *City of Baghdad*, which had arrived from the north as previously stated. The mails from England (brought by the latter machine) were taken by the *City of Karachi* to Capetown, where they arrived on February 2, two days late! It is suggested that new names be given to the airliners—*City of Box* and *City of Cox*. However, it is to be hoped that Imperial Airways will have better luck in the future, but in fairness to all concerned it should be pointed

out that the machines involved, all D.H. "Hercules" type, are now trusty veterans hardly suitable—and, in fact, they were never designed—for the elevated storm-swept areas of Central Africa. Soon, however, the new and improved airliners (eight Armstrong-Whitworth "Atlantans") will, we hope, be put into service and similar comedies will be few and far between.

More Trouble

It is reported from Teheran that the Persian Government has notified the British Legation that Persia does not intend to renew the agreement permitting British airliners on the service to India to pass over Persian territory. Imperial Airways will, therefore, have to seek out a new route—probably over Arabia, with Bahrein as a base.

A Ray of Sunshine

On top of all Imperial Airways' troubles comes the report that one of the airliners on the Indian air route has created a new record for big commercial aircraft by flying from Bushire to Karachi, a distance of 1,100 miles, in a single day.

U.S. In Trouble Too

SEVEN aeroplanes with 20 or more persons aboard are missing in various parts of the United States owing to storms and fog. Only one is known to have crashed. Air patrols, motor cars, motor boats and horsemen are searching for the machines.

Airisms from the Four Winds

The Segrave Memorial Trophy

At a meeting of the Committee for the Segrave Memorial Trophy at the Royal Automobile Club on January 29 it was decided to award the Trophy—which is awarded to the British subject who accomplishes the most outstanding demonstration of the possibilities of transport by land, air, or water—to Sq. Ldr. Bert Hinkler for his solo flight from New York to London via Kingston, Maracaibo, Trinidad, Fortaleza, Natal, Bathurst, St. Louis, St. Etienne, Casablanca, Madrid, and Paris. The approximate distance of the flight, which included the crossing of the Southern Atlantic from Brazil to North-West Africa, was 10,560 miles, and the total flying time was 104½ hr.

Paris-Madagascar Attempt

THREE French airmen, MM. Reginensi, Touge and Lenier, set out from Le Bourget on January 30 on a flight to Madagascar. On February 1 a wireless message from the airmen was picked up by French wireless stations in mid-Sahara which stated "Stranded. No more petrol." This message was preceded by two others, one saying they ought to have reached Tamanrasset but sandstorms had obliterated the track, and asking for smoke signals, and the other saying they were turning back to Insalak and requesting arrangements to be made for refuelling. It was arranged that aeroplanes should be sent out to assist the stranded airmen.

Italian African Flight

THE Italian airmen, Lombardi and Robbianno, who left Rome on January 21 in a Caproni 105 for Africa, reached Nairobi on January 27.

High Commissioner for Palestine Flies to Cairo

LT. GEN. SIR ARTHUR WAUCHOPE, High Commissioner for Palestine, arrived in Cairo on January 31 by air from Jerusalem for a three days' visit to Lt. Gen. Sir John Burnett-Stuart, the G.O.C. British Troops in Egypt.

R.A.F. Flying-Boat Mishap

ONE of the "Iris" flying-boats attached to the Mount Batten Air Station, Plymouth, sank at its moorings on January 28. It was stated officially that the cause of the mishap was unknown, but it was probably the result of a collision with a trawler the previous day.

Heavens!

We have had much agitation lately regarding "sky-writing" and night sky-signs—to say nothing about complaints re low flying and Sunday flying. "Free-Air" lovers will surely get even more perturbed when they hear of the latest trespasses in the air. We are to have giant voices now, booming earthwards from aircraft in the sky. A short while back one of the American Blimps cruised over New York, a loud voice appealing for help for the unemployed and a jazz band playing "Happy Days" causing considerable excitement in the streets below. Last week a Caproni machine carried out tests over Milan with an apparatus which amplified the human voice more than 1,600,000 times! Our own Royal Air Force have also, we believe, made tests with aerial loud speakers, to be employed for warning, admonishing, etc., unruly tribes in the East. Finally, Sig. Marinetti is suggesting the use of the sky as a stage for plays—with pilots as actors and probably the above devices plus inflated dummies as properties!

Girl Pilot Killed

AN Exchange message from Tarragona states that Miss Irene Klug, a 19-year-old pilot, crashed in the mountains near Moncada last week and the machine burst into flames and Miss Klug and her brother—who was a passenger—were burned to death.

U.S. Airships

ACCORDING to a report in the *Morning Post* sensational evidence that faulty materials and workmanship may endanger the giant airship *Akron* was given before the House Naval Commission on January 27 by the General Secretary of the International Association of Machinists, who alleged that two mechanics who worked on the *Akron* informed him there were from five hundred to six hundred defective rivets in one section alone. Mr. R. A. D. Moffett, Chief of the Naval Aeronautics Bureau, admitted that the

airship was 19,000 lb. over weight and three knots slower than was contracted for, but claimed that she was the best dirigible in the world, with a speed of 69 knots and a climbing capacity of 16,000 ft. It is also reported that the U.S. Navy Department is considering selling the *Los Angeles*, the proceeds of the sale being applied to increasing the size and effectiveness of ZR3, now under construction.

France's Air Service

ON Friday, January 29, a long debate was held in the French Chamber on the policy of the Air Ministry. Two days previously the Commission of Finance had adopted a preliminary estimate by the Air Minister, M. Dumesnil, of £15,000,000 (at par) after a sitting of four hours. In the Chamber there was much criticism of the policy of the Air Ministry. In particular, M. Georges Leygues, a former Minister of Marine, declared that the equipment of the naval air arm was totally insufficient and was in a deplorable condition. The charges against the Air Ministry are summarised by the Paris correspondent of *The Times* as follows:—"It is alleged that the Ministry has spent vast sums of money on technical development with almost negligible results in the way of efficient and progressive design; the equipment of the French air forces is inferior in quality—in some classes very greatly inferior—to that of other nations; and the training of flying personnel in the military formations does not produce the qualities needed in an airman. In short, before its organisation is finally formed on the present lines, the Air Ministry is required to give an account of its stewardship of French aviation during the last three years." In the debate M. Bouessé said that France had been unable to compete for the Schneider Trophy after spending 57,000,000 fcs. (£457,000) on unsuccessful experiments. French fighters had a maximum speed of 155 m.p.h., while foreign fighters could fly at 215 m.p.h. A large flying-boat (evidently the Latécoère Lat. 300, which was described in *FLIGHT* of January 1) which had cost £192,000 (at par) to build, sank on its first flight. The debate was adjourned for a week.

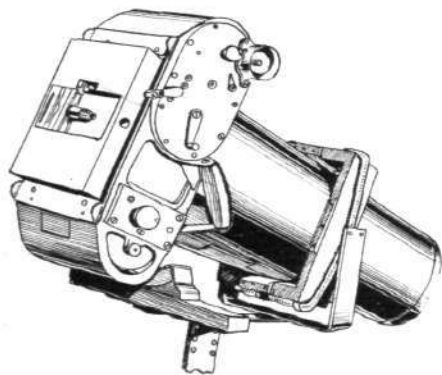


WILBUR WRIGHT MEMORIAL: A memorial to Wilbur Wright was unveiled on Jan. 30 at Pau, where this pioneer aviator made his first European flights in 1908. Our picture shows Mrs. Walter Edge, wife of the U.S. Ambassador, placing some flowers at the base of the monument.

The Industry

FOLMER AERIAL CAMERA

A NEAT type of aerial camera intended for close-up ground shots as well as vertical and oblique shots from the air is the K-10 developed by the Folmer Graflex Corp., of Rochester, N.Y. An aluminium body, streamlined to lessen resistance, brings its weight down to 22 lb. when loaded with 25 exposure roll film. A half-turn of the winding crank and slight pressure on the release lever takes the picture, the lever being close enough to the right-hand grip to enable the operator to press it without releasing his hold. The shutter is automatically set and the film moved into position for the next exposure by a single half-turn of the crank.



The Folmer K-5 ready for oblique photography.

The shutter operates from 1/50th of a second to 1/220th of a second, and is the focal plane type, which has a high-speed curtain operating in close proximity to the film for high shutter efficiency. The Kodak anastigmat lens, 10-in. f.4.5, is fitted, with an adjustable Iris diaphragm housed in a specially designed focusing mount to permit the camera being used for both aerial and ground work. Distances of 8 ft., 10 ft., 12 ft., 25 ft., 50 ft. and 100 ft. and infinity are graduated on the front of the mount to assist in accurate focusing. A snap button holds the lens rigidly at infinity.

The finder is of the direct vision box type, which can be moved out of the way when the camera is not in use. A snap button release brings it into position, and it is held rigidly against wind pressure. A spirit level of the T type is mounted on the back as a guide for levelling the camera. The capacity of the K-10 is 25 exposures (5 in. x 7 in.) per roll of film. Three types of film are available, regular, supersensitive and hypersensitized, and the loading or unloading may be done in daylight as simply as with an ordinary hand camera. The rear section of the K-10 is removed easily for this purpose, while the roll film is held in place by two knurled spool centres which are unscrewed on the outside of the camera.

The number of exposures is automatically recorded for the operator, and a field case, cushioned to absorb shocks and carry four 25-exposure

rolls of film, is provided for housing the K-10. This camera is intended for the use of all flying men who are interested in aerial photography, whether professionally or as amateurs.

A larger type of aerial camera developed by the same company is the K-5. It is operated from suspension mounts, one fitted over an aperture in the fuselage floor for vertical shots, and another attached to either side of the fuselage for oblique shots. The inner frame of the vertical suspension mount has a universal movement, which, together with two spirit levels fitted on the camera, enables the operator to keep the camera accurately aimed at the moment of exposure. The utility of the K-5 is increased by its adaptability to 12-in. and 20-in. lens. For oblique shots the cone fitted with the 20-in. lens is best, as it gives a larger image and permits photographs being made at higher altitudes. Kodak anastigmat f.4.5 lens is used, and the focal plane shutter has a single aperture of $1\frac{1}{4}$ in., with speed adjustable from 1/60th to 1/280th of a second.

A perforated platen on the camera is connected by rubber hose to a Venturi tube fixed to the outside of the fuselage, to create a constant vacuum suction through the platen to hold the film flat in the focal plane. The tube must be placed to prevent sharp bends in the connecting hose.

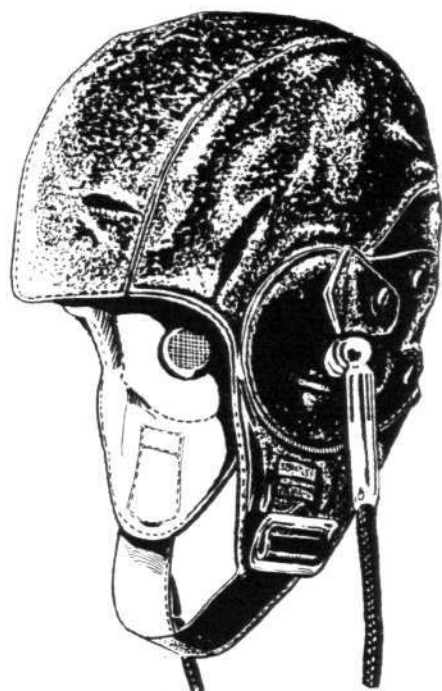
The K-5 has a capacity of 100 exposures, the size of the negatives being $7\frac{1}{8}$ in. x $9\frac{1}{2}$ in. Constructed of aluminium, its weight with a 12-in. cone and 75 ft. of film is 37 lb., or 47 lb. with the same amount of film and the 20-in. cone.

FORDS IN THE ALBERT HALL

THE FORD MOTOR COMPANY, of Regent Street, London, W.1, have taken the Albert Hall, Kensington, from February 19-22, for the public exhibition of all Ford products. These will include such parts of Ford aircraft as it is possible to get into the Hall. Ford and Lincoln cars, agricultural and commercial vehicles, while the centre of attraction is expected to be the new 8-h.p. baby car which it is anticipated will be produced in large numbers from the Dagenham plant, by May.

THE "SELFRIDGE" FLYING HELMET

THE CHIEF features of this helmet are that it is made in four panels, which run from front to back, thereby ensuring a much closer fit across the head; the front and sides are designed to fit closely across the forehead and round the ears; the strap has been so placed that, instead of pulling the helmet apart in front of the telephones, it causes it to sit even more snugly across the cheeks; the strap is wide and does not go too far back across the throat, and is fastened



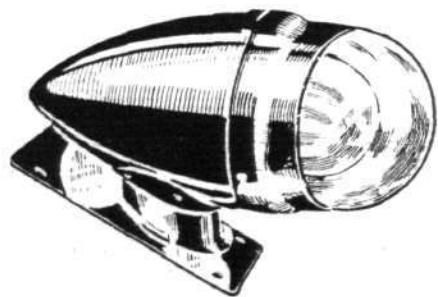
The Selfridge flying helmet.

by a large and easily adjustable sliding buckle, thus preventing the usual wear that occurs with the normal type of prong buckle which necessitates eyelet holes in the other half of the strap. The fittings for the telephones are of the normal type, except that the inside is of "Sorbo" padding, to prevent the metal parts of the telephones hurting the ears. In the event of the ear-phones not being worn, an extra leather flap is provided inside to remove any likelihood of draught. There are either one or two buckles, whichever are required, on the back of the helmet for holding the goggles to the helmet. Inside the helmet, along the line of the forehead, is a velvet pad to prevent the helmet from marking the forehead or slipping.

This helmet can be supplied in either black or brown leather, and special sun-proof lining can be fitted, if required, at no extra cost. Inquiries should be sent to the Aviation Department of Selfridge & Co., Ltd.

ROTAX EQUIPMENT

THE RAPID increase of night flying has led to the production of many types of suitable lighting installations for aircraft. Amongst the leading firms producing such equipment are Rotax, Ltd., of Willesden Junction, N.W.10. Their installation for normal night flying may be fed either by a wind-driven or engine-driven dynamo, both of



A Rotax wing-tip light.

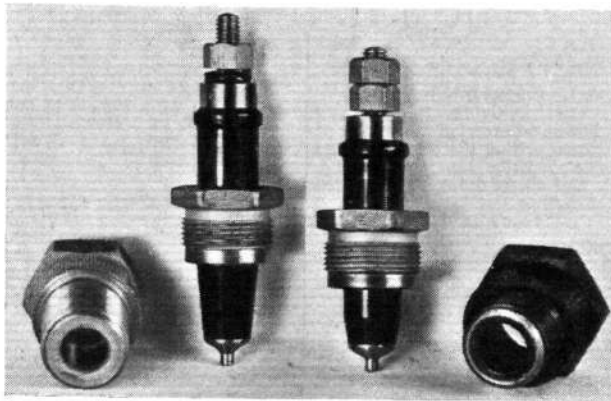
which are comparatively light. When batteries are required these are filled with a jelly acid solution, making them, therefore, absolutely non-spillable, while specially designed plates and celluloid containers are used in order to keep the weight as low as possible. Rotax wing tip and tail lamps are particularly light and are of streamline form. The fronts may easily be detached should it be necessary to replace the bulbs at any time. Other fittings which can also be supplied by this firm are interior lamps, cockpit lights, switch boxes, fuse boxes and voltage regulators, all of which are particularly neat in their design and admirable for the purpose.

IMPERIAL AIRWAYS SOUVENIR

AT the Lunch held immediately before the start from Croydon of the Handley Page 42 *Helena* on the Capetown route on Wednesday, January 20, the guests were given a four-page folder as a souvenir of the occasion. All those air-minded people who would like a copy of this may obtain it by writing to Imperial Airways, Ltd., Victoria Station, S.W.1. Its first page brings out the antiquity of the idea of aerial travel by a quotation from the *Travels and Adventures of Pero Tafur*, dated 1435. Further on will be found extracts from the sayings of famous men such as Cecil Rhodes and Henry Thomas Buckle. That attributed to Cecil Rhodes is taken from a letter dated September 7, 1900, and addressed to Ewart Scott Grogan, who was present at the lunch, and is peculiarly apposite even when applied to the present day. Henson's conception of aerial travel is also illustrated by an extract from *Punch* of 1843.

MEYROWITZ GOGGLES

E. B. MEYROWITZ, of 1A, Old Bond Street, would like to draw attention to the fact that Luxor goggles are not genuine unless the name Luxor is clearly stamped on the case of the goggles and unless their name is on the goggles themselves. They wish to do so in view of the fact that they have been informed of imitations which are being made of their goggles and which are being offered for sale.



The Lodge aviation plugs illustrated here are (left) the A.2 long reach type and (right) the X.170 as used in the Schneider Trophy Contest and the World Speed Record Flight. The finish is very fine while the bodies are sherardised for rust prevention. The black mica used for the insulators is highly polished thus avoiding a tendency to collect dirt and moisture.

(Flight Photo.)

THE "WESSEX" FOR HIRE

THE WESTLAND Aircraft Works, of Yeovil, Somerset, are willing to hear from persons or firms considering the charter or hire of either of their demonstration "Wessex" machines. These are, firstly, G-EBXK (three 5-cylinder Genet Major engines), which is of wooden construction giving a figure for pay load and crew of 677 lb. This is, of course, with full fuel and oil (96 gall. petrol, 6 gall. oil), and, naturally, the pay load may be increased by a reduction of these quantities. The other machine is G-ABEG, and is the same aircraft which the Prince of Wales used during his tour in the South of France last summer. This machine has three 7-cylinder Genet Major engines and with fuel for 4 hr. at 100-105 m.p.h. The pay load is 1,055 lb. Either of these aircraft can maintain an altitude of 6,000 ft. on any two engines, while they are both fitted with the latest type wind screen arrangements, Westland patent rudder bias, gear, wheel brakes, and swivelling tail wheel. One of the conditions under which the firm would be willing to discuss terms would be that the hirer should make himself responsible for all maintenance, insurance and supply the pilot.

INSTRUMENT VACUUM PUMP

THE ECLIPSE Aviation Corporation, of East Orange, New Jersey, has placed upon the market an engine-driven instrument vacuum pump designed to replace the venturi used to operate suction-driven aircraft instruments, such as the bank-and-

turn indicator, artificial horizon, and directional gyro. The pump is equipped with a flange to fit the standard four-bolt gun synchroniser drive pad on the engine, and a socket in the pump rotor receives the drive from the nut on top of the synchroniser drive shaft.

This pump has sufficient capacity to operate the three above-mentioned instruments at the normal throttled r.p.m. of the engine during a glide, and it will also operate all three instruments at an altitude of 10,000 ft. at normal cruising speed. The pump will provide sufficient suction during the warming-up period on the ground to insure the instruments operating correctly at time of take-off.

The pump is of the rotary vane type, with all wearing surfaces of thin wall nickel-iron. It requires no attention, lubrication being taken by a pressure line from the engine, with a restriction in the pump limiting the oil used to a few drops per minute. It weighs 3½ lb.

IRVIN CHUTES FOR BELGIUM

DURING 1931 the foreign output of Irvin Air Chutes from the company's British factory at Letchworth was much higher than in any previous year. No less than 11 European countries placed contracts with the company, several of which were repeat contracts. In some of the countries concerned Irvin Air Chutes are used exclusively.

In the last year or more the Belgian Government have been supplied with 120 Irvin Air Chutes, and they have now placed another order for 125, upon which the Letchworth works are at present busily engaged. Apart from these foreign contracts, the company have, as usual, received large contracts from the British Air Ministry.



Cardiff authorities have found the drainage problems on their new aerodrome very serious but these are now being overcome with the help of a Fordson tractor hauling a mole-draining machine. Mr. Bunning, instructor to the Cardiff Aeroplane Club, stands in the centre, contemplating the tractor at work.

AIR MINISTRY NOTICES

NOTICES TO GROUND ENGINEERS

No. 79 of the year 1931. Parachutes. (148249/31.)

The duties of Ground Engineers licensed in Category X (Parachutes) are restricted to those of normal care and maintenance, i.e. :—

(i) Examination of the components comprising the parachute and harness to ensure that they are in a serviceable condition.

(ii) Periodically opening the pack and ascertaining that deterioration is not taking place.

Note.—Reference should be made to the maker's handbook of instructions in this connection.

(iii) Ensuring that the repacking of the parachute is carried out in the approved manner.

(iv) Ensuring that the harness is fitted to the wearer in accordance with the maker's instructions.

(v) The carrying out of minor repairs such as the following :—

(a) The darning of small holes in the canopy, not exceeding $\frac{1}{4}$ -in. in size, with silk thread.

(b) The darning or patching of small holes in the pack.

(c) The renewal of pack elastics.

(d) The replacement of eyes for pack elastics on the pack.

(e) The fitting of new rip cords.

(f) The fitting of new auxiliary parachute.

Parachutes requiring repairs other than those of a minor character such as are detailed above should be returned to the makers for renovation.

It should be particularly noted that parachutes stained by acid are to be classified as unserviceable and should be returned to the makers for repair before being again put into service.

Avro "Avian," all types : Quick Release Pin Securing Control Stick in Bottom Socket

The following paragraph should be added to Notice to Aircraft Owners and Ground Engineers, No. 29/1931 :—

"The Certificate of Airworthiness of an aircraft affected by this Modification shall be liable to suspension or cancellation if the modification has not been incorporated prior to January 31, 1932. As from that date, Certificates of Airworthiness will not be renewed and Ground Engineers must not sign Daily Certificates in respect of the aircraft concerned unless the modification has been correctly embodied."

December 28, 1931.

No. 1 of the year 1932. Engine Test Requirements. (143529/31.)

It is hereby notified that :—

(1) The attention of aircraft owners and ground engineers is drawn to the fact that the requirements of Air Publication 1208 Design Leaflets C.1. ("Engine Classification"), C.2. ("Engine Tests—General"), and C.3. ("Tests for Engines rated for Performance at Sea Level") will be brought into effect as from January 14, 1932, as follows :—

(a) In respect of all applications for type approval of aircraft engines.

(b) In respect of the airworthiness approval and acceptance of subsequent Series engines.

(c) In respect of all renewals of airworthiness approval of subsequent Series engines after complete overhaul or rectification.

(2) Design Leaflets C.1-3, are published in Amendment List No. 21 to A.P. 1208, which is obtainable either direct from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C.2, or through any bookseller, at the price of 4d. net or 5d. post free.

Copies of this publication should be obtained immediately by all concerned.

January 1, 1932.

No. 2 of the year 1932. Ground Engineers—Facilities for Extension or Renewal of Licences Abroad. (147624/31.)

Facilities for the variation or renewal of ground engineer's licences issued by the Air Ministry have been provided at Cairo and Kisumu.

Ground engineers operating on the undermentioned Imperial Air Services abroad should apply for variation or renewal of their licences as indicated below, and not direct to the Air Ministry.

Division of Imperial Air Route

Mediterranean (Genoa to Alexandria) }
Near East (Cairo to Delhi) }
North Africa (Cairo to Khartoum) }
East and South Africa (Khartoum to Cape Town)

Air Ministry Representative

British Civil Aviation Directorate }
Representative in Egypt, Helio- }
polis Aerodrome, Cairo. }
British Civil Aviation Directorate }
Representative in East Africa, }
Kisumu, Kenya Colony. }

Similarly, other ground engineers holding Air Ministry licences who are employed in the vicinity of the above-mentioned routes, should make application in the first instance to the local Air Ministry representative for variation or renewal of their licences.

It is important that ground engineers should notify to the Air Ministry their transfer to service abroad, and also their transfer from service abroad to home employment as and when such changes occur. In this connection, attention is drawn to Notice to Aircraft Owners and Ground Engineers, No. 52 of 1931.

January 7, 1932.

No. 3 of the year 1932. Fairey-Reed Airscrews : Periodical Examination for Defects. (60361/30.)

Instances have occurred of transverse fatigue failure of the blade sheet of Fairey-Reed airscrews fitted with metal hub blocks, the fractures commencing at the holes for the hub bolts or the tubular bolts securing the metal blocks, and extending towards the leading and trailing edges. An instance has also occurred of transverse fatigue failure commencing from the identification stamping.

As the result of these failures, it is necessary that, in future, frequent inspection of these airscrews in the vicinity of the hub blocks and identification stamping be made.

The blade sheet must be carefully examined on both sides in the above-mentioned regions. Where metal hub blocks are fitted, both sides of the blade sheet visible through the lightening holes must also be examined.

For this purpose, airscrews must be removed from their hubs, and spinners, where fitted, removed from the airscrews. In no circumstances, however, may the hub blocks be removed from the airscrew.

Airscrews on which any signs of fracture are observed, must be removed from the aircraft and the matter reported.

January 23, 1932.

AIR MINISTRY NOTICES TO AIRMEN. SERIES A

No. 71 of the year 1931. Night Flying Without Navigation Lights. (84095/31.)

Royal Air Force aircraft will be flying between 1700 and 0045 G.M.T. daily (Saturdays and Sundays excepted) during the period from January 1 to March 31, 1932, over the area bounded by straight lines joining Chelsfield, Addington, Oxted, Sevenoaks and Chelsfield. Above an altitude of 5,000 ft. the aircraft will not exhibit navigation lights, unless other aircraft are observed in their vicinity.

December 30, 1931.

No. 1 of the year 1932. Air Navigation Directions, 1931 (A.N.D. 10B). (135247/31.)

Attention is drawn to the publication of the Air Navigation Directions, 1931 (A.N.D. 10B), copies of which are obtainable direct from His Majesty's Stationery Office, or through any bookseller, price 1d. net, or 1½d., post free.

The new Directions further amend the Air Navigation Directions, 1930 (A.N.D. 10), as amended by the Air Navigation Directions, 1931 (A.N.D. 10A), and the principal matters affected are as follow :—

(i) Conditions to be complied with before aircraft which have been overhauled, repaired or modified may again fly.

(ii) Periods of validity of certain types of personnel licences where the holder is of the female sex.

(iii) Medical requirements and proofs of competency for certain types of personnel licences.

January 25, 1932.



MEMORIAL TO ITALIAN ATLANTIC AIRMEN: As previously recorded in "Flight," a memorial, shown above, to the Italian airmen who were killed while carrying out the formation flight from Italy to Brazil last year, was unveiled by Gen. Balbo at Bolama, Portuguese West Africa, last December.

THE ROYAL AIR FORCE

London Gazette, January 26, 1932.

General Duties Branch

The follg. are granted short service comms. as Pilot Officers for four years on active list with effect from and with seny. of Jan. 12:—A. McD. Bowman, A. J. Draper, J. G. Glen, A. D. Grace, R. A. R. Rae. The follg. Pilot Officers are promoted to rank of Flying Officer:—D. B. D. Field (Jan. 26); N. C. M. Styche (Jan. 27). Squadron Leader W. A. Coryton, M.V.O., D.F.C., is restored to full pay from half pay (Jan. 18); Pilot Officer W. F. C. Hobson is placed on half-pay list, Scale B, from Jan. 18 to Feb. 2 inclusive; Flight Lieut. H. G. Cook, D.S.M., is placed on retired list on account of ill-health (Jan. 18); the short service commn. of Pilot Officer on probation W. C. Le Page is terminated on cessation of duty (Jan. 20).

Stores Branch

The follg. Flying Officers on probation are confirmed in rank:—W. Eccles, F. B. C. Fundrey, I. Lloyd, P. S. Stewart (Jan. 5); J. T. Brown (Jan. 7). *Erratum.*—Gazette Jan. 19 (FLIGHT, Jan. 29, 1932, p. 103).—Grant of permanent commissions in the Stores Branch. For Jan. 8, 1931, read Jan. 8, 1932.

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE

The follg. are appointed to the permanent service (Jan. 1):—SISTER.—Miss J. W. Rogers. STAFF NURSES.—Miss E. K. Wright, Miss E. Gibson, Miss E. M. Marfleet, Miss A. M. Williamson, Miss G. K. Johnston, Miss E. V. Lamb.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commanders: B. L. Huskisson, D.S.C., to R.A.F. Depot, Uxbridge, whilst attending course at the R.N. Staff College, Greenwich, 12.1.32. L. L. Maclean to R.A.F. Depot, Uxbridge, 14.12.31.

Squadron Leaders: A. H. Wann, to R.A.F. Base, Calshot, 4.1.32. F. H. Laurence, M.C., to No. 1 Sch. of Tech. Training (Apprentices), Halton, 15.1.32. E. I. Bussell, to Air Ministry (D. of T.), 15.1.32. R. H. Hamner, M.C., to No. 43 Sqdn., Tangmere, 13.1.32.

Flight Lieutenants: A. F. Lang, M.B.E., to R.A.F. Base, Calshot, 4.1.32. W. E. Swann, to No. 1 Sch. of Tech. Training (Apprentices), Halton, 18.1.32. H. A. Purvis, to R.A.F. Base, Gosport, 18.1.32. L. W. Jarvis, to Administrative Wing, Halton, 11.1.32. H. S. Broughall, M.C., D.F.C., to No. 22 Sqdn., Martlesham Heath, 8.1.32. P. J. Bett, to No. 500 Sqdn., Manston, 11.1.32. E. S. Moulton-Barrett, to R.A.F. Base, Calshot, 11.1.32. H. M. Whittle, to Marine Aircraft Experimental Estab., Felixstowe, 7.1.32.

Flying Officers: G. J. C. Paul, to R.A.F. Base, Gosport, 14.1.32. H. Kerr, to R.A.F. Training Base, Leuchars, 7.1.32. J. E. Allen, K. F. T. Pickles, T. B. Cooper, E. M. Gurney, D. McC. Gordon, J. C. F. Peacock, all to R.A.F. Base, Calshot, 4.1.32. F. R. Worthington and W. H. Hutton, to R.A.F. Base, Calshot, 5.1.32. J. C. K. Rogers, to R.A.F. Base, Calshot, 14.1.32. R. C. Field, to School of Photography, S. Farnborough, 5.1.32. L. S. Cundell, to No. 2 Sqdn., Manston, 11.1.32. I. N. Roome, to R.A.F. Depot, Uxbridge, 28.11.31. G. R. A. Elsmie, to No. 601 Sqdn., Hendon, 8.1.32.



Flight Cadetships for Aircraft Apprentices. The "Lord Wakefield" Scholarship Awards

THE Air Ministry announces:—Aircraft Apprentices C. C. Francis and A. T. D. Sanders from No. 1 School of Technical Training (Apprentices), Halton, and Aircraft Apprentice G. Thripp from the Electrical and Wireless School, Cranwell, have been selected for cadetships at the Royal Air Force College, Cranwell, on the result of the examinations held on completion of their three years' training as aircraft apprentices.

The "Lord Wakefield" Scholarships, valued at £75 each, have been awarded to Flight Cadet P. H. Agard Butler (on the result of the recent competitive examination for entry into the Royal Air Force College) and to Flight Cadet C. C. Francis and the "Hyde Thomson" Memorial Prize, valued at about £33, to Flight Cadet G. Thripp.

Imperial Defence College.

THE following officers have completed satisfactorily a course at the Imperial Defence College, which terminated on December 18, 1931:—Group Captain P. C. Maltby, D.S.O., A.F.C., p.s.a.; Wing Commander W. A. McClaughry, D.S.O., M.C., D.F.C., p.s.a.; Wing Commander D. G. Donald, D.F.C., A.F.C., p.s.a.; Wing Commander F. H. M. Maynard, A.F.C., p.s.a.; Squadron Leader J. J. Breen, p.s.a.

No. 1 Air Defence Group and Southern Office, A.I.D.

HEADQUARTERS, No. 1 Air Defence Group, at present occupying premises at Sloane Square and King's Road, Chelsea, will be moved on March 23, 1932, to 33-34, Tavistock Place, which was vacated by Headquarters, Coastal Area, on January 18, 1932.

Southern Office, A.I.D., which now occupies premises at 3 and 4, Clement's Inn, will be moved to 33-34, Tavistock Place, as soon as possible after April 1, 1932. The exact date of the move will be promulgated later.

ROYAL AIR FORCE—AIRCRAFT APPRENTICES.

Vacancies for Boys of Good Education.

The Air Ministry announces:—Two hundred and fifty aircraft apprentices, between the ages of 15 and 17, are required by the Royal Air Force, for entry into the schools of technical training at Halton, Bucks., and at Cranwell, near Sleaford, Lines. They will be enlisted as the result of an Open Competition* and of a Limited Competition,† and these Competitions will be held in the near future by the Civil Service Commissioners and the Air Ministry, respectively. Boys in possession of an approved first school certificate may be admitted without other educational examinations. Successful candidates will be required to complete a period of twelve years' regular Air Force service from the age of 18, in addition to the training period. At the age of 30 they

ROYAL AIR FORCE RESERVE

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The follg. Flying Officers relinquish their comms. on completion of service:—N. S. McConnell (Sept. 18, 1931); T. P. Isaac (Nov. 27, 1931).

Medical Branch

Flight Lieut. J. W. Harper, M.D., relinquishes his commn. on completion of service and is permitted to retain his rank (Dec. 14, 1931).

SPECIAL RESERVE

General Duties Branch

Pilot Officer C. C. Ellis is promoted to rank of Flying Officer (Dec. 9, 1931); Pilot Officer M. Dawney relinquishes his commn. on appointment to a Flight Cadetship in the R.A.F. (Jan. 14).

AUXILIARY AIR FORCE

Medical Branch

No. 600 (CITY OF LONDON) (BOMBER) SQUADRON. H. W. Walter, M.D., B.S., is granted a commn. as a Flying Officer (Dec. 112, 1931).

Stores Branch

Wing Commander G. F. M. Williams, to Air Ministry (D. of E.), for Stores Staff Duties, 8.1.32.

Flying Officer A. Wall, to H.Q., R.A.F., Cranwell, 8.1.32.

Pilot Officers: The following are posted to H.Q., R.A.F., Cranwell, on appointment to permanent comms., on probation, with effect from 8.1.32:—E. G. Ambridge, J. H. Barnes, C. F. Harrington, A. R. Morton, S. W. Needham and K. N. Smith.

may return to civil life, or upon attaining N.C.O. rank, and subject to Service requirements, may be permitted to re-engage to complete time for pension.

Full information regarding the dates of the respective examinations, the methods of entry and the aircraft apprentice scheme generally, can be obtained upon application to the Secretary, Air Ministry (Aircraft Apprentices' Department), Gwydyr House, Whitehall, London, S.W.1. The sons of officers, warrant officers and senior N.C.O.'s of the three services will receive special consideration.

The scheme offers a good opportunity to well-educated boys of obtaining a three-years' apprentice course of a high standard and of following an interesting technical career. Already 8,000 aircraft apprentices have completed their training at the technical schools of the Royal Air Force.

The principal trades open to boys are metal fitter, a new trade brought into existence by the introduction of the metal aeroplane, which involves training in both fitting and sheet metal work; fitter (aero engine); fitter (armourer); wireless operator-mechanic; and electrician. The apprentices are given a thorough training in their trade by highly qualified technical instructors and their general education is also carried on simultaneously by a staff of graduate teachers.

During the training period the present rate of pay is 1s. a day for the first two years and 1s. 6d. a day thereafter until the apprentice has both attained the age of 18 and been posted to a unit on completing his training. When he is posted to a unit for duty as an aircraftsman, the commencing rate of pay at present varies from 3s. 6d. to 5s. 6d. a day (24s. 6d. to 38s. 6d. a week), according to the marks obtained in the passing-out examination. He also receives free board and lodging and a uniform allowance. Subsequently there is the prospect of promotion on passing certain prescribed tests.

A few apprentices of special promise are granted free cadetships at the Royal Air Force College for training for Commissioned rank.

For the remainder, opportunities arise later to volunteer to qualify in flying and become airman pilots. Between 100 and 120 of the latter are selected annually from volunteers of all trades. From amongst airman pilots a few are periodically selected for commissioned rank.

Press Section, Air Ministry,
January 25, 1932.

* The Open Competition is conducted by the Civil Service Commissioners at the following centres:—

London.	Belfast.	Edinburgh.	Plymouth.
Birmingham.	Chatham.	Cardiff.	Portsmouth.

† The Limited Competition is conducted at numerous centres selected by the various Local Education Authorities to bring the examination as near as possible to the neighbourhood in which their candidates reside.

AIR POST STAMPS

By DOUGLAS ARMSTRONG

Costa Rican Scandal

AN attempt to exploit air stamp collectors in connection with the latest issue of provisional aero-stamps in the Central American Republic of Costa Rica has happily been nipped in the bud through the prompt action of certain members of the National Assembly. These stamps, three in number, were issued on December 19, 1931, in order to meet the public demand until such time as a definite series in course of preparation should be received from the printers. Backed by the full authority of an official decree, they comprised Fiscal stamps of the nominal values of 2, 5 and 10 Colons, adapted to air post purposes by overprinting with the inscription "Habilitado—1931—Correo Aereo," and surcharged with the new denominations 2, 3 and 5 Colons respectively. It is alleged, however, that the greater part of the initial printing of 1,500 sets found its way by irregular means into the hands of a government official, who, having created a corner in them, disposed of them to stamp dealers in various parts of the world at an average price of \$10 a set—the equivalent face value being actually about \$2.50!

In the debate which took place in the Assembly it was declared that the decree authorising such a limited issue was slipped through surreptitiously, and that the whole affair had been engineered by interested parties for personal gain. A second and larger printing has since been requisitioned, identical in all respects with the first, so that there will now be a sufficient supply to go round without collectors being forced to pay fancy prices for them.

Meanwhile, the permanent air mail stamps are daily expected to materialise, uniformly printed in the design of the solitary 20 c. value of 1926, and comprising 20 c., 40 c., 80 c., 1, 2, 3 and 5 Colons. Eighty centavos represents the prevailing fee for letters forwarded over the Pan-American Airways system to the U.S.A.

Panama's Inaugural Air Stamp

There has been a certain amount of activity in the air stamp line in other Central American countries of late. The Republic of Panama signalled the formal institution of an interior air mail service connecting the capital with the Western Provinces by issuing on November 27 last a particular 5 centesimos air stamp depicting a monoplane heading east over the ruins of Old Panama, locally lithographed in blue upon ungummed paper and perforated 12½. The designation reads "Noviembre 28 de 1931—Primer Vuelo Nacional," and the edition was limited to 40,000 copies.

Nicaragua has included in a special issue of stamps in belated commemoration of the earthquake which devastated Managua on March 31, 1931, three values reserved for air mail purposes, and so inscribed, viz., 15 c. mauve, 20 c. green and 25 c. bistre, to the tune of 5,000 copies of each. The main feature of the design is two views of the General Post Office, before and after the disaster, and the proceeds of their sale are to be applied to the reconstruction and improvement of the postal service.

Yet another set of three particular air post stamps hails from San Salvador, marking the 120th anniversary of the struggle for independence. In the vignette common to the trio an aeroplane is seen passing over the historic belfry of the Church of St. Mercedes, from which the patriotic priest, Father Jose Mathias Delgado, sounded the tocsin on November 5, 1811.

North Borneo Air Mail

An air mail flight in an outpost of the Empire which has passed unrecorded until now was carried out by Sqd. Ldr. Livock with two flying boats between Kudat and Sandakan, in British North Borneo, on June 4, 1930. A small mail was carried and cancelled with a rectangular cachet enclosing the words "Air Mail—North Borneo" in two lines, with an aeroplane device in the centre. Covers conveyed on this flight have only recently come to light, and make an interesting addition to a collection of Empire air post souvenirs.

Do-X Stamps Status

Attempts having been made in certain quarters to discredit the air post stamps of Surinam, overprinted for the purpose of a special mail despatched by the flying boat Do-X, in August last, an official declaration has been published by the Postmaster-General at Paramaribo stating that the stamps were an authorised issue in every way

and on sale to the public in the ordinary course. Some 4,200 sets only were actually sold, however, and the balance of the 10,000 overprinted destroyed with the exception of 1,442 retained for official purposes or circulated by the Berne Bureau of the Universal Postal Union. In the circumstances it seems improbable that the values of these stamps will fall below the current quotation of approximately £2 per set.

Air Stamps Statistics

According to a statistical table compiled by the eminent French philatelist, Dr. Georges Brunel, and published in the latest number of *L'Echo de la Timbrologie*, the total number of new air post stamps issued during 1931 amounted to 248, of which the greater proportion, 107, came from America.

PUBLICATION RECEIVED

Armaments Year-Book, 1932. League of Nations Conference for the Reduction and Limitation of Armaments. London: George Allen & Unwin, Ltd. Price 7s. 6d.; in cloth, 10s.

AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = mo tors. The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1930

Published January 28, 1931

- 24,794. ALUMINIUM, LTD. Screw propellers. (364,002.)
- 25,688. ALUMINIUM, LTD. Screw propellers. (364,137.)
- 29,074. H. R. RICARDO. Swash-plate i.c. engines. (364,051.)
- 29,261. H. R. DAVIES. Aircraft. (364,151.)
- 29,262. H. R. DAVIES. Control for aircraft. (364,152.)
- 29,263. H. R. DAVIES. Aircraft sustaining system and propulsion. (364,059.)
- 29,337. A. H. R. FEDDEN and BRISTOL AEROPLANE CO., LTD. Cyl. heads for i.c. engines. (364,065.)
- 31,527. H. L. STEVENS. Aircraft. (364,218.)
- 33,963. D. E. ROSS. Construction of airships. (364,248.)
- 36,717. HANDLEY PAGE, LTD., and S. G. EBEL. Fastening for attaching cowings, etc. (364,292.)

Published February 4, 1932

- 25,290. W. MESSERSCHMITT. Aircraft. (364,534.)
- 27,194. VICKERS (AVIATION), LTD., R. K. PIERSON and T. S. DUNCAN. Brake mechanism. (364,659.)
- 29,332. J. R. S. WHITING. Apparatus for teaching flying and demonstrating working of controls. (364,548.)
- 30,125. INDIA-RUBBER, GUTTA PERCHA & TELEGRAPH WORKS CO., LTD., and W. L. AVERY. Controls for fluid-pressure-operated wheel brakes. (364,674.)
- 31,030. S. SWITLIK. Upholstery for aircraft chairs. (364,705.)
- 32,632. A. E. and H. O. SHORT. Radiators. (364,727.)
- 37,228. C. C. COLLEY. Fire-extinguishers. (364,792.)
- 37,355. ECLIPSE AVIATION CORPN. Screw propellers. (364,796.)
- 39,074. G. TRICAU. Parachutes. (364,825.)
- 39,344. R. T. YOUNGMAN. Emergency notation gear for aircraft. (364,827.)

APPLIED FOR IN 1931

Published January 28, 1931

- 356. A. E. SHORT and H. O. SHORT. Fairings for streamlining struts of aircraft. (364,336.)
- 358. BAYERISCHE FLUGZEUGWERKE AKT.-GES. and W. MESSERSCHMITT. Aircraft wing. (364,337.)
- 6,239. D. MACKENZIE. Dirigible airships. (364,410.)
- 17,988. J. A. SANDERS and F. L. STOOT. Aeroplane provided with plurality of propellers. (364,510.)
- 18,042. C. FILPA and G. PASUT. Shock-absorbers for aircraft undercarriages. (364,511.)
- 21,672. D. E. ROSS. Construction of airships. (364,518.)

Published February 4, 1932

- 1,257. H. LAWRENCE. Screw-propeller blades. (364,853.)
- 2,484. SIKORSKY AVIATION CORPN. Brakes. (364,868.)
- 11,501. L. VIENOT. Goggles. (364,970.)
- 13,424. H. KERN. Aeroplane with vertically oscillatable wings. (364,986.)
- 25,403. ECLIPSE AVIATION CORPN. Screw propellers. (365,027.)
- 31,893. FIAT SOC. ANON. Aeroplanes. (365,030.)

FLIGHT, The Aircraft Engineer and Airships.

36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

Telephone (2 lines): Holborn, 3211.

Holborn, 1884.

Telegraphic address: Truditur, Westcent, London.

SUBSCRIPTION RATES POST FREE

UNITED KINGDOM			UNITED STATES		OTHER COUNTRIES	
	s.	d.				s. d.
3 Months	8	3	3 Months	\$2-20	3 Months	8 9
6 "	16	6	6 "	\$4-40	6 "	17 6
12 "	33	0	12 "	\$8-75	12 "	35 0

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C.2, and crossed "Westminster Bank."

Should any difficulty be experienced in procuring "FLIGHT" from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.